NOVEMBER 21, 1960

PAPER TRADE JOURNAL

Automation at Celotex . . .

Complete story of the new L'Anse, Michigan fiberboard mill, touted as the world's most mechanized

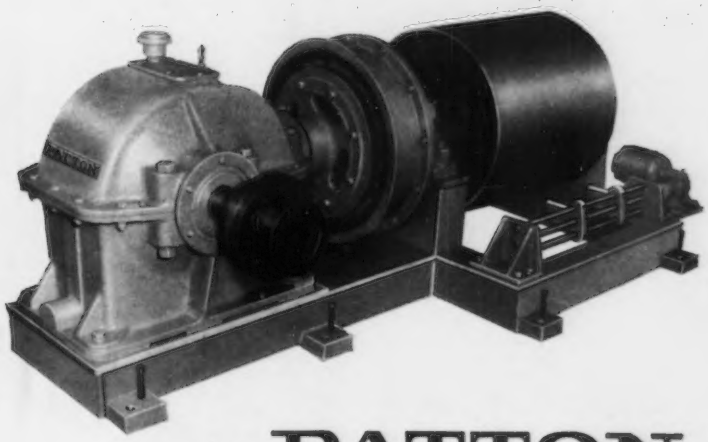
Calender Roll Care . . .

Tips on how to properly maintain the most essential rolls you own

And, What's More . . .

Using the roll nip and crown test Papermaking at the Basel museum

PAPER MACHINE DRIVES



by PATTON

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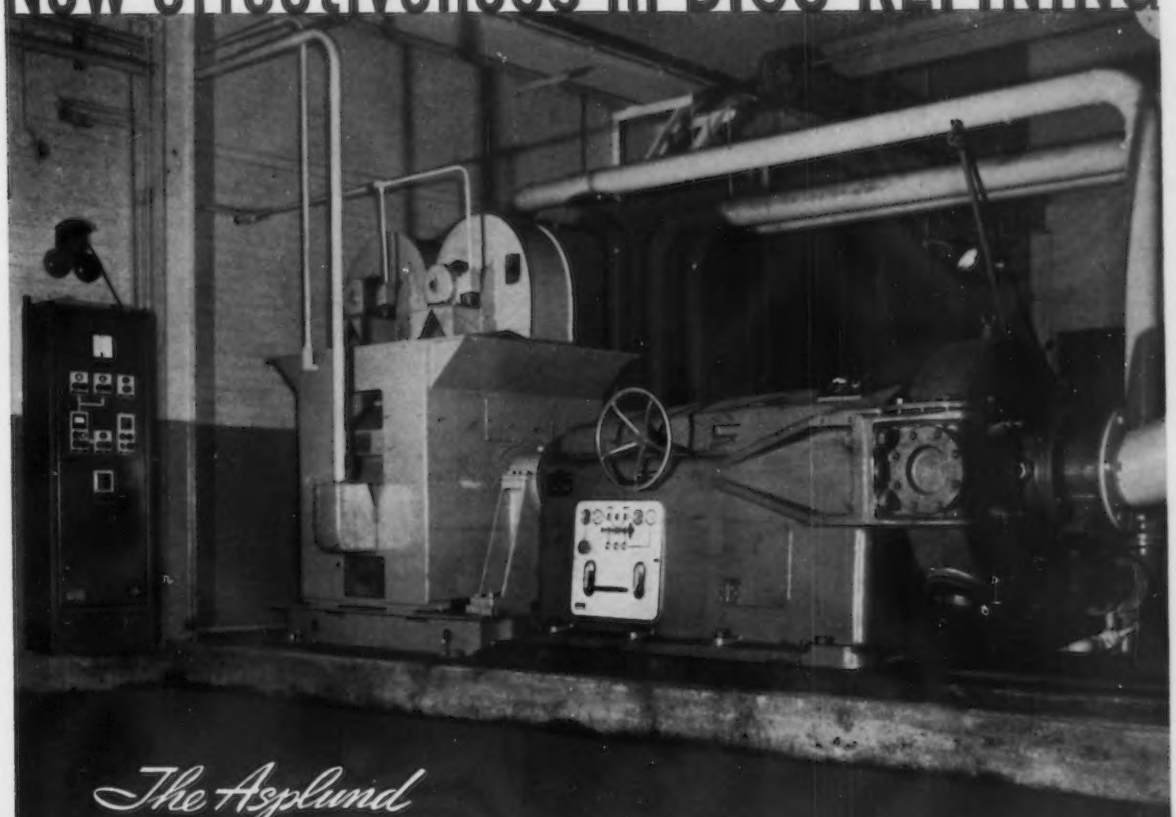

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NORTH AMERICAN MILLS are discovering advantages present only in the Raffinator Disc Refiner for getting highest strength development in all kinds of pulp at consistencies up to 20%.

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Rugged, dependable and efficient, the Raffinator comes complete with electrical system, control panel and automatic safety devices. All parts exposed to stock are made of stainless steel.

Currently proving its effectiveness in over 600 European installations, this high precision disc refiner, an Asplund invention, is engineered and manufactured in Sweden by Aktiebolaget Defibrator. It is now made available to North American mills by Bolton-Emerson.

Get all the facts about the Raffinator Disc Refiner from The Emerson Manufacturing Co., Division of John W. Bolton & Sons, Lawrence, Massachusetts.

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Week of November 21, 1960—Vol. 144, No. 47

TRENDS 23

NEWS OF THE WEEK 25

FEATURE ARTICLES

Celotex Starts Up World's Most Automated Fiberboard Mill 30

Swiss Paper Museum Opens New Department 40

Proper Calender Roll Maintenance Is Essential to Paper Quality 42

How to Use the Stowe Woodward Nip and Crown Test Method 45

PAPER PEOPLE 26

NEWS OF CONVERTERS 27

PRICES OF FIBERS 48

NEW EQUIPMENT & SUPPLIES 50

NEWS OF SUPPLIERS .. 61

NEW LITERATURE 63

FIGURES OF THE WEEK 65

CLASSIFIED ADVERTISING 66

ADVERTISERS INDEX .. 70

REMEMBER THESE DATES

January 24-27, Technical Section, CPPA Annual Meeting, Queen Elizabeth Hotel, Montreal, Canada

February 20-23, Paper Week in New York

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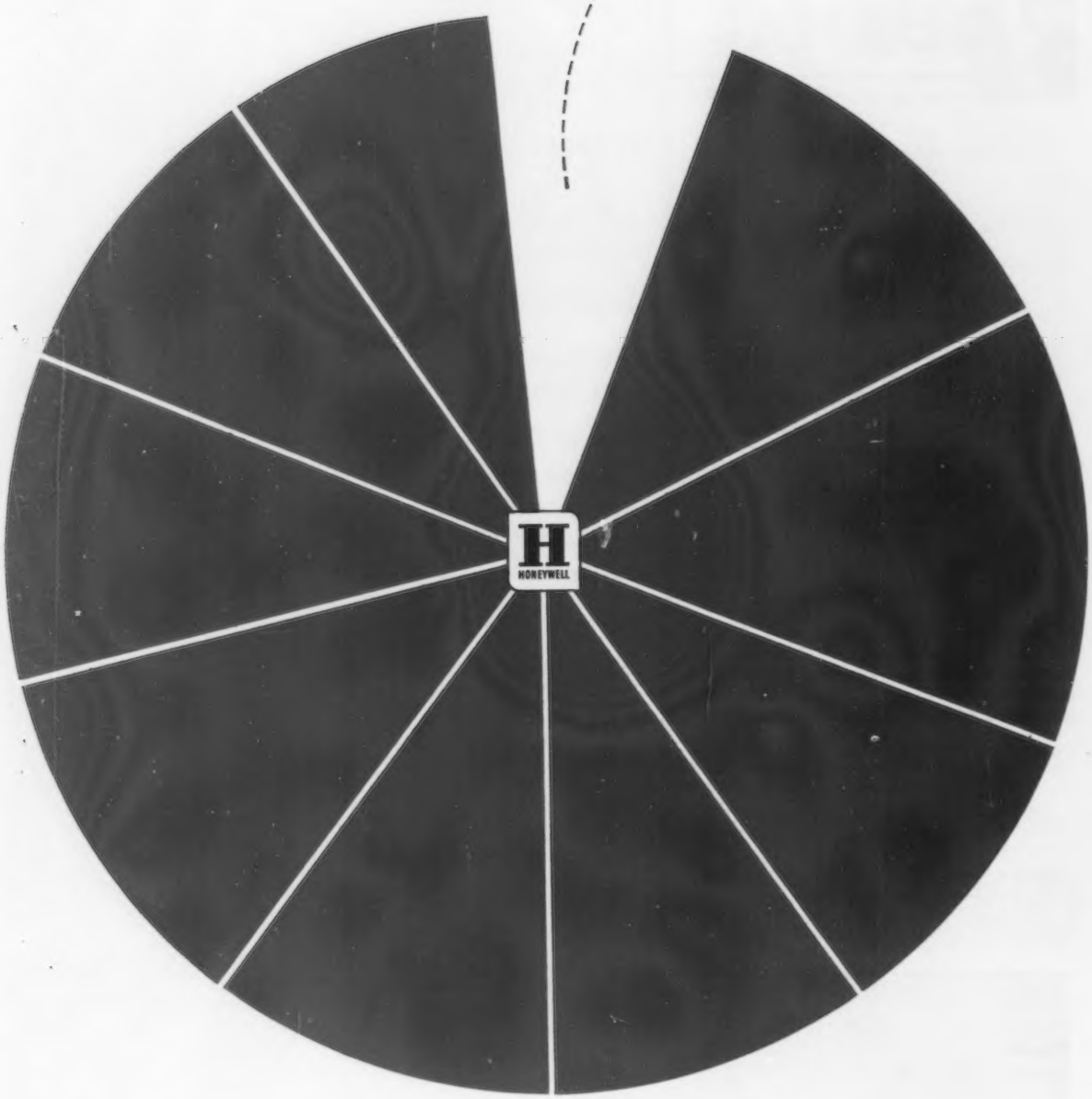
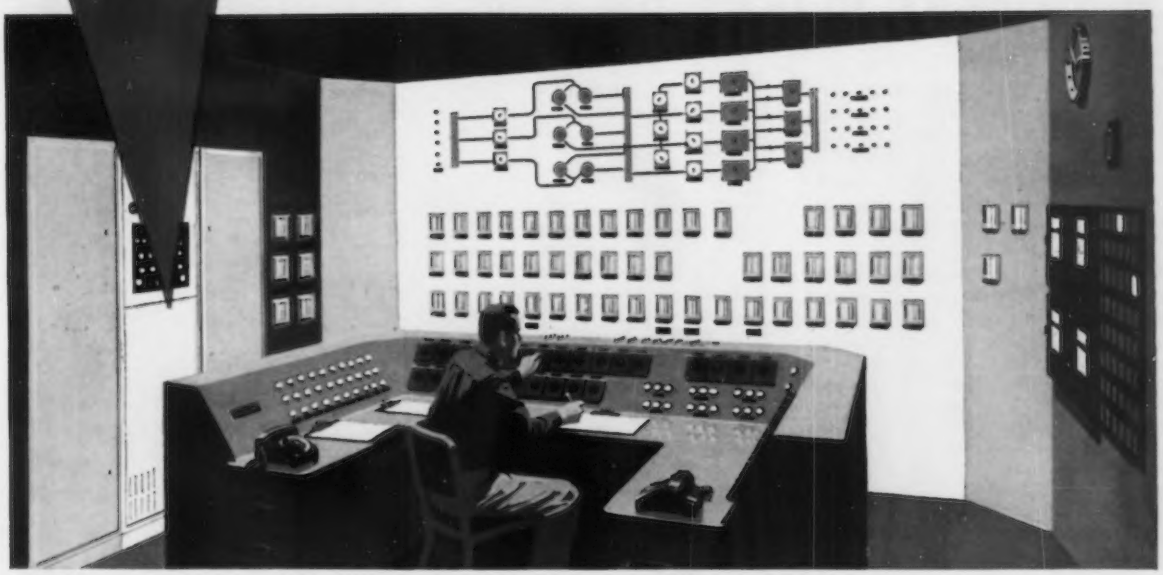


PART OF A PROCESS CONTROL SYSTEM



You hear a lot about industrial process computers these days. The paper industry is beginning to realize that computers can be used as the reins as well as the brains—for control as well as data reduction—in the many intricate phases of pulp and paper processing.

The Big Picture. But like the human brain, a computer cannot work independently. It must receive raw information from sensory instruments. Where automatic control is involved, it must transmit its logic to "muscle" instruments which translate decisions into action. The computer is part of a system, and, like the human body, the system functions effectively only when all of its parts are perfectly coordinated. In Honeywell systems, this compatibility of *all* system components is built in, for all Honeywell instruments and controls are *made* to complement each other.

Process Experience plus Computer Know-How. Equally important, a computer must be properly applied. Computers are "illiterate." They must be told what to do and how to do it by men who know. In engineering a computer-directed instrumentation system that will be precisely matched to your needs, Honeywell systems engineers draw on more than 75 years of measurement and control experience.

Single-Source Responsibility. Honeywell offers you a single contract covering your entire system. You get economy, convenience, simplified training of personnel, economical stocking of parts and accessories—*all* the advantages of single-source purchasing. And you get the only truly complete computer control package available from a single source.

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One in a series of interviews with the men who are "Virginia"

"Many mills use our hydro in 2-stage groundwood pulp bleaching—and the new chip pulp demands a 2-stage bleach to reach the 75-plus brightness range"

Technical service supervisor Bob Barton and Tom Allan, assistant manager, Industrial Sales Department, Virginia Smelting Company, answer questions on 2-stage bleaching of groundwood and mechanical pulp made from hardwood chips.

Q What is the economical break point between 1- and 2-stage bleaching?

Mr. Barton—There is no hard and fast rule, because so many factors enter in—the brightness level desired, the type of pulp, the cost of the present bleaching operation. Generally, I would say the break came at around 12 brightness points. A peroxide stage *can* be pushed beyond this. But to get a really appreciable gain at reasonable cost requires 2-stage bleaching—that is, one of peroxide and one of hydro.

Mr. Allan—Sometimes a mill using one stage of peroxide will use its bleached pulp storage chest for touching up the pulp with hydro and pick up a couple of points economically. It's usually cheaper than using peroxide. You see, the peroxide hits a flat point in its brightness-concentration curve. At that point it often takes another whole percent of peroxide to pick up one brightness point. And the cost is around $4 extra. For the same cost, five points of brightness may be obtained with a second stage hydrosulfite bleach.

Q Is 2-stage bleaching a way to be sure of getting high brightness?

Mr. Barton—Yes. To get the highest possible brightness in groundwood paper, the 2-stage bleach is the surest and most economical method. It seems to me the specialty paper manufacturers—the firms making special printing grades—will eventually require 2-stage bleaching.

Mr. Allan—That's right. Usually the 2-stage operation is chosen because brightness is the primary consideration. However, I do know of one mill that's considering going to 2-stage because of cost. They reach about a 72 brightness with one stage of peroxide, but the costs sometimes go up to $15 a ton. With a second stage the savings would be really worth while. I would say that the mill that wants to hit up in the 75-plus range just about *has* to go to two stages. And the competitive situation is beginning to make more and more mills consider this possibility very seriously.

Thomas T. Allan and Robert W. Barton

Q Why is 2-stage bleaching so important with mechanical pulps made from caustic pretreated hardwood chips?

Mr. Barton—Because this is about the only way to get a high brightness from these so-called caustic pulps. And I think the chip pulp is going to have much wider use, largely because of availability of hardwoods. This pulp can be bleached with chlorine, but its final brightness is unstable, and the stock gets a definite yellow tinge. The process is rather different from bleaching groundwood. You start by acidifying and washing the stock. It is then bleached at about 180°F with 3% peroxide, using more caustic buffer than with groundwood, to get a brightness of about 70 points.

Mr. Allan—This stock has a very low initial brightness—about 40, I'd say. With 3% peroxide you can pick up about 30 points. Then to get the final brightness up where it's wanted, the pulp is bleached in a second stage with hydrosulfite to give a final brightness close to that of a bleached chemical fiber.

Facts on 2-stage bleaching

Yours for a phone call, wire or letter. We will send you any data you want—or, if you say the word, a representative will call on you at your convenience to discuss your problems.

• • •

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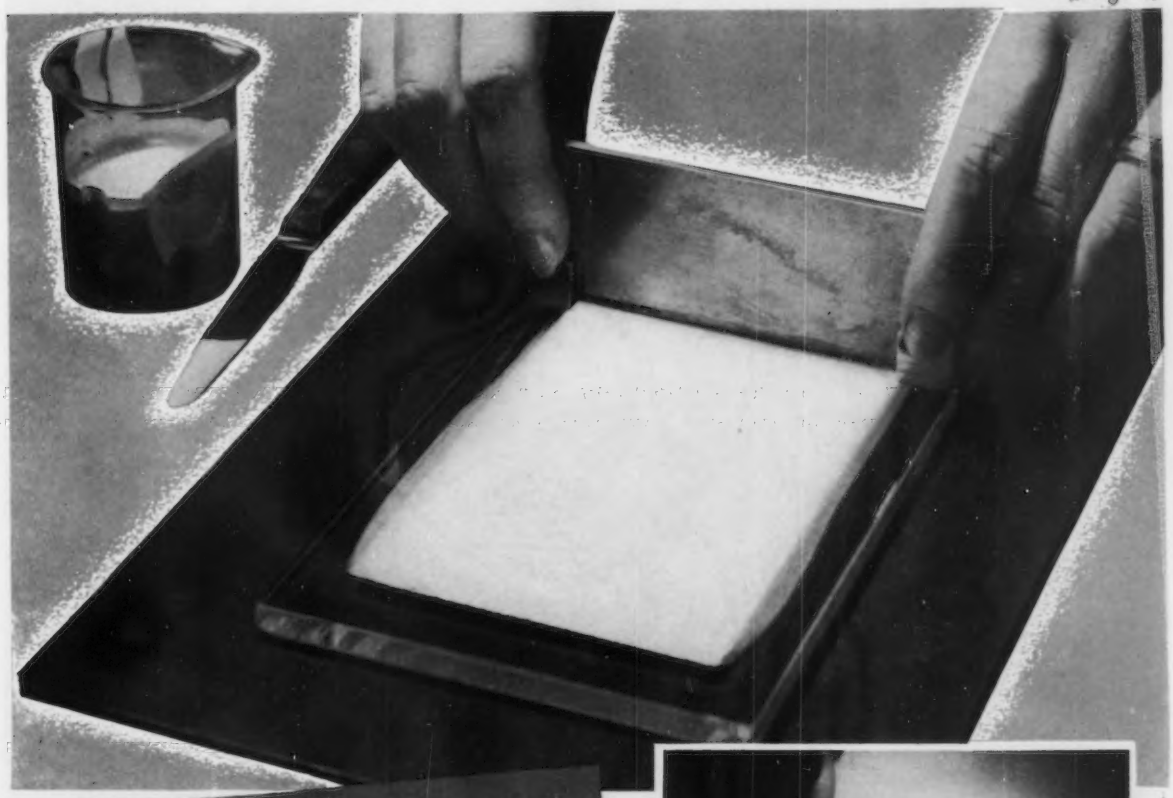

FREQUENCY OF AGGREGATES

The relationship of frequency of aggregates in pigments to smoothness and opacity of paper coatings is a comparatively new but important study under way at the laboratories of New Jersey Zinc.

Out of this and other phases of the research program on paper coatings is expected to come new knowledge which can be applied to the development of new titanium dioxides with new properties for new and better coated paper products. Also, it will serve as your assurance of the dependability of HORSE HEAD titanium dioxides.

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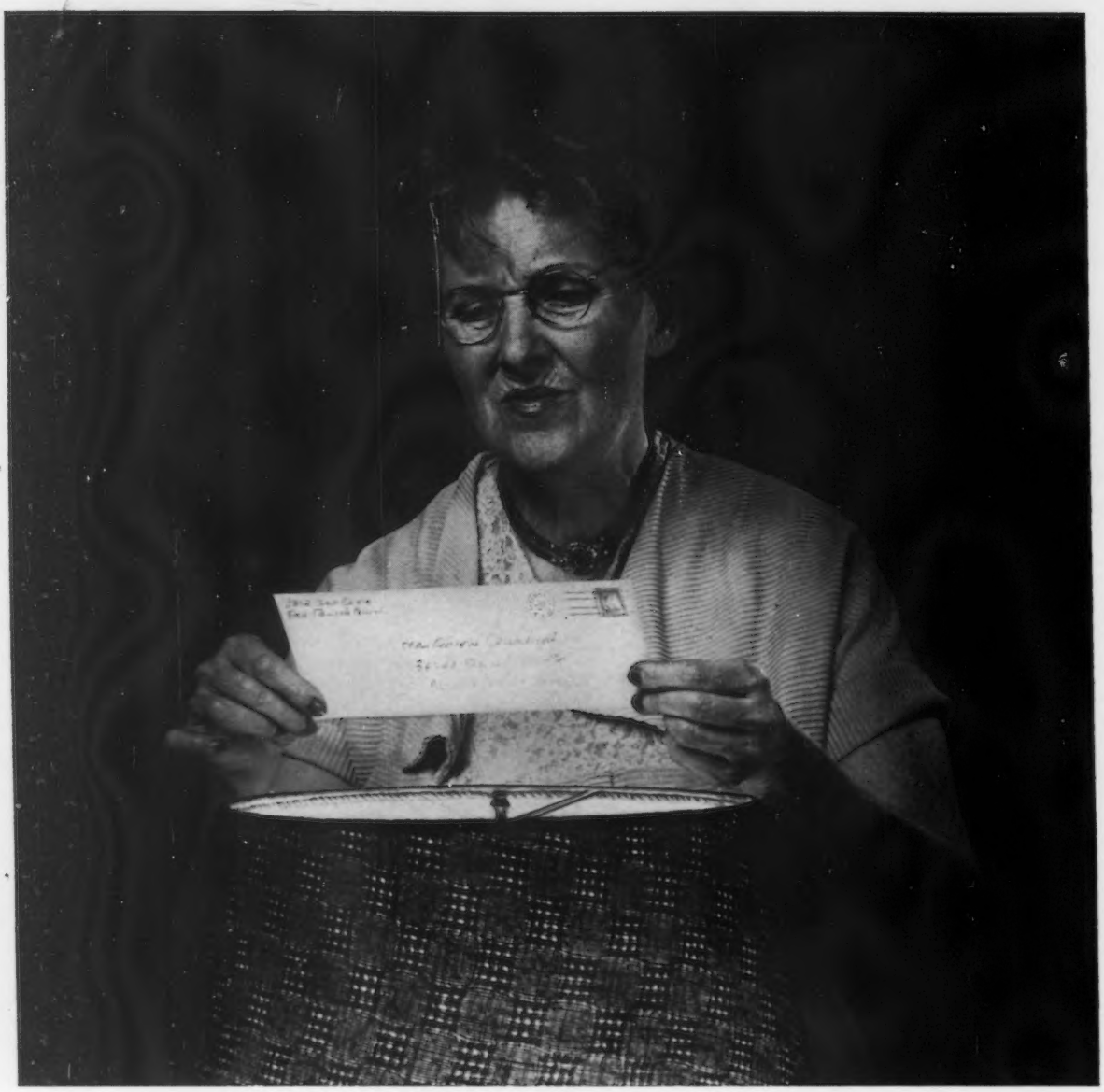

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Celite® diatomite fillers provide the paper industry with a low-cost way to obtain greater sheet opacity while maintaining maximum brightness.

With its unique combination of properties, Celite provides a greater opacity effect than any other comparably priced filler. Celite's irregular particle shape, fine particle size distribution and high bulk make it ideal as a partial replacement for TiO_2 pigments. What's more, Celite's excellent filtration properties cause the retention of a higher percentage of TiO_2. As a result, less TiO_2 is needed to obtain required optical properties.

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Celite Division inert fillers and extender pigments in paper are not considered food additives as defined by FD&C Act Amended, Section 201(s).

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Fig. 2474BSW—Bell-o-Seal (Packless) O.S.& Y. Globe Valve for 150 pounds W.P. Available in various corrosion-resisting metals and alloys. Can be furnished with screwed, flanged, socket welding or butt welding ends.

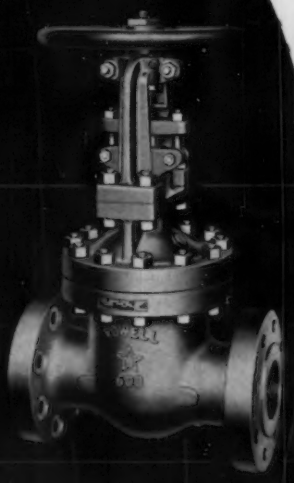

Fig. 6003SS—Large Stainless Steel Gate Valve for 600 pounds W.P. Face to face and end flange dimensions conform to latest standards. Sizes ½" to 24", inclusive.

Fig. 2345—Stainless Steel, screwed end Swing Check Valve for 300 pounds W.P. Available also with flanged or socket welding ends. Face to face and end flange dimensions of flanged end valves conform to latest standards.

Powell pure metal and special alloy valves have long been recognized by the Chemical and Process Industries as leaders in the field of corrosion-resistant flow control equipment.

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They are available in a wide selection of materials ranging from "A" to "Z" (Aluminum to Zirconium) to handle practically every known corrosive media. For complete details contact your nearby Powell Valve Distributor—or write directly to us.

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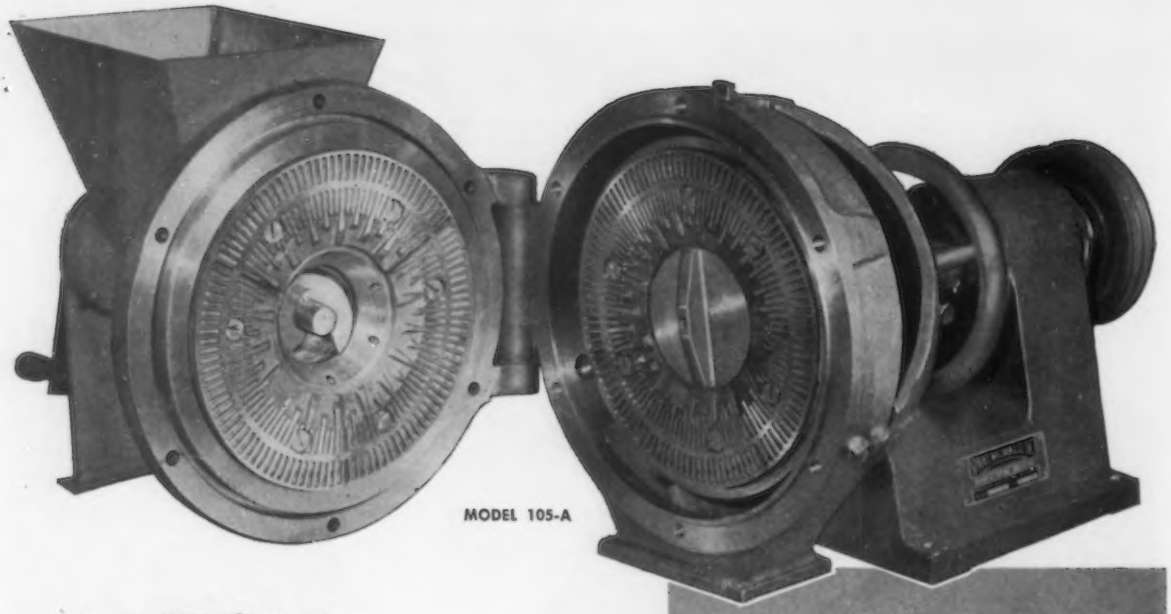


MODEL 105-A

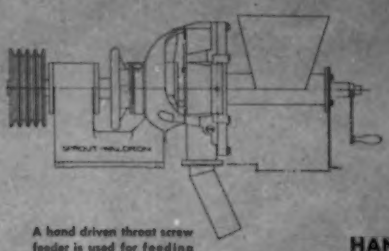
NEW "SPROUT" LABORATORY REFINER

Here is a precision-built machine design which simulates commercial refiner operations, saving valuable manhours and eliminating costly installation errors.

This 12" single rotating disc laboratory refiner has the same mechanical features and plate designs used in the famous 36-2 "Sprout". Construction is rugged, dust-tight, water-tight and planned to permit easy access for plate changing. Simplified tramming makes it possible to maintain perfect parallelism of the disc, thus insuring uniform refining of the feedstock and even plate wear.

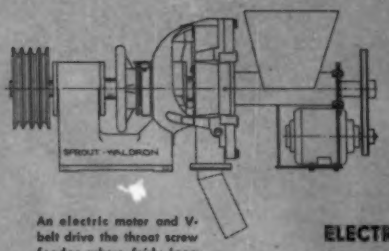
This "Sprout" lab refiner is available in cast iron or acid-resistant construction. It is suitable for continuous operation at horsepowers between 25 and 40. For intermittent operation, maximum horsepower may be increased to 65.

Specifications and details are covered in Bulletin 17-B. Copies available on request.



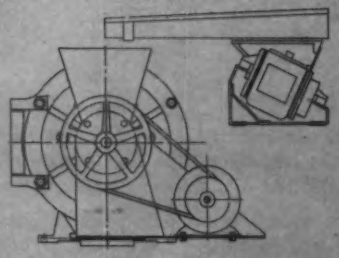
A hand driven throat screw feeder is used for feeding most materials in laboratory work.

HAND FEEDING



An electric motor and V-belt drive the throat screw feeder where fairly long runs are necessary.

ELECTRIC FEEDING



A magnetic vibratory feeder supplies a constant accurate flow of material.

MAGNETIC FEEDING

Feeding Arrangements MODEL 105-A

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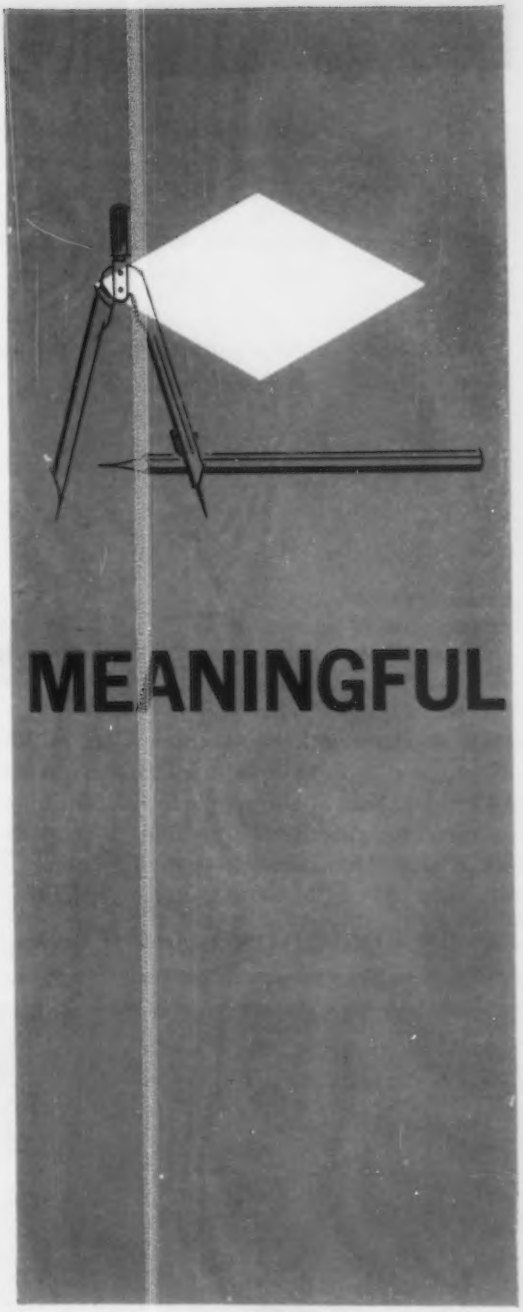
E/206

HOW TO DESIGN A TRADEMARK

Why, it's easy as A-B-C. Just start with a simple shape, one that's readily identified and easily remembered. (The Jenkins Diamond is a good example.) Then just fill in the blank spaces. That's all there is to it, and almost anyone can do it!



HOW TO MAKE IT MEANINGFUL

Ah, that isn't so easy nor so simple.

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Time and *performance* make the difference.

Take the Jenkins Bros. trademark. There's nothing tricky about the design, certainly nothing fancy about the words.

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Why? Because in all the years since 1864 there has been no compromise in the *quality* of Jenkins Valves. We know it; you know it.

And that is the only way we know to make a trademark *meaningful*. That will always be the Jenkins way of making valves.

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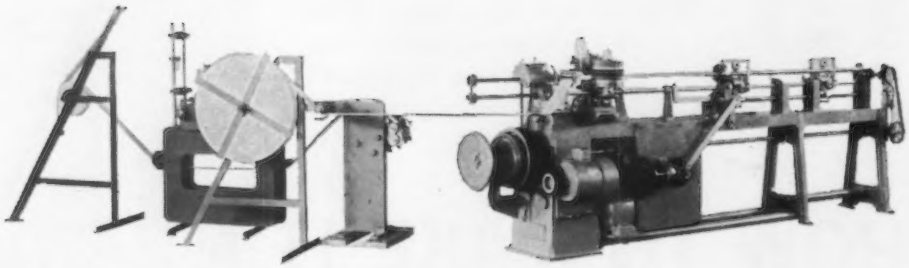

New mechanical Core Machine — up to 200 feet per minute! A completely new mechanical core machine just developed by Paper Converting – Model 2330 – operates efficiently at high speeds, 180 to 200 feet of core per minute. Variable cut-off lengths are possible with score-cut clean ends as required for automatic core loaders. An optional one-color flexographic press is available for product identification. A wonderful new example of PCMCo's *creative* engineering . . . the kind that builds better production answers into converting machines.

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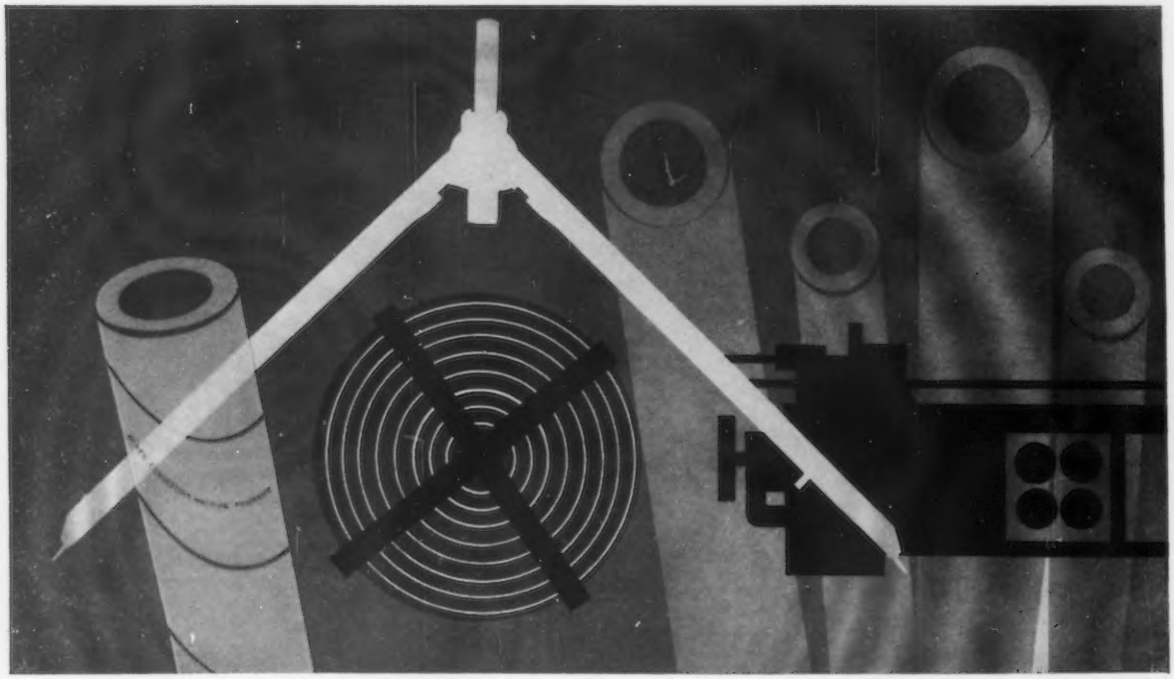

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2 **Emphasis on quality** insures extra years of economical, productive service.

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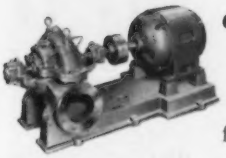

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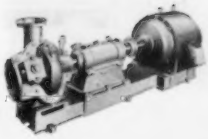

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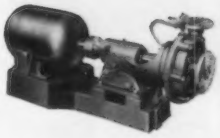

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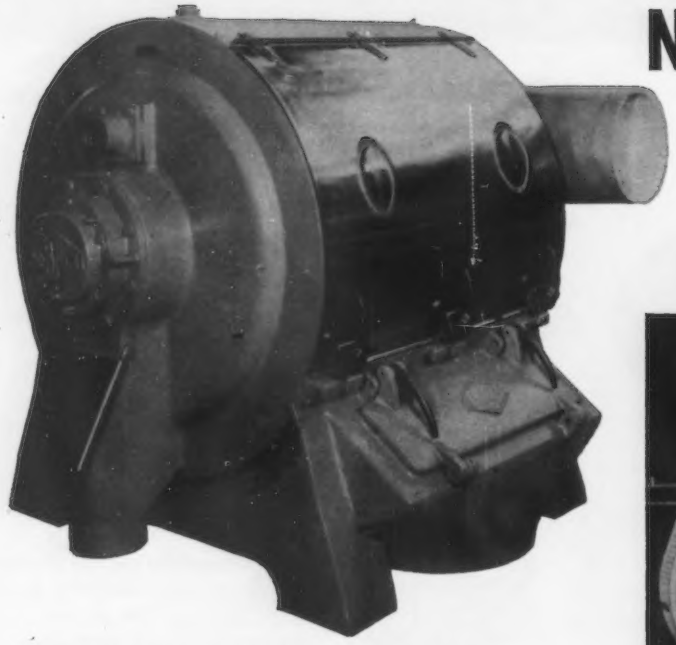
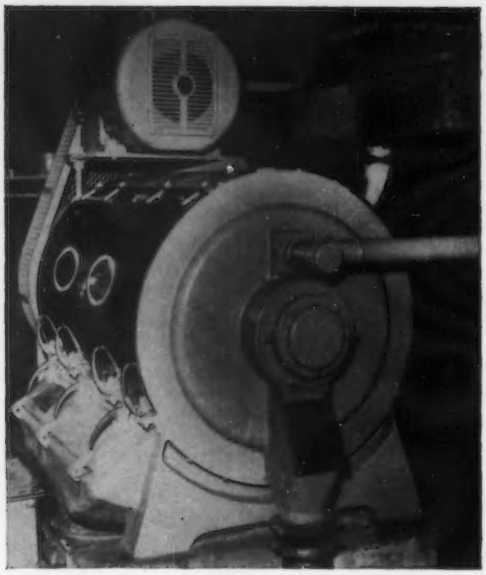
Squier machinery to process sugar cane, coffee and rice. Special processing machinery for chemicals.



NEW ADVANCES IN LOW COST QUALITY PULP SCREENING



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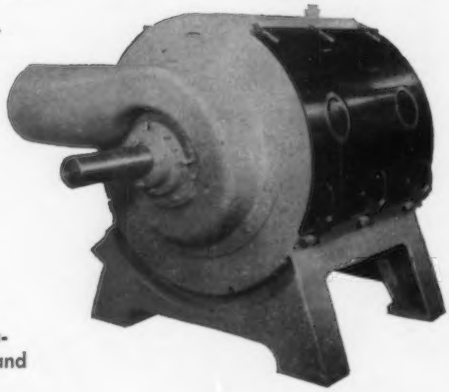
Hot Stock Screening
Sealed Black Liquor Knotting
Fibre Length Classification
Paper Stock Cleaning

The new Impco Centrifugal Pulp Screen is the latest example of the progress made toward the ultimate in low cost quality screening. This screen incorporates many improved principles and features such as:

- — a stock inlet allowing direct top, bottom, front or rear infeeding which simplifies installation piping;
- — a tangential inlet which changes flow direction from linear to rotating, yet retains velocity head;
- — a special stator which provides uniform internal distribution of pulp;
- — a patented high-efficiency rotor which increases capacity without additional horsepower;*
- — a bottom accepted stock outlet permitting all sub-floor piping;
- — a full length quick-opening door for routine accepted stock sampling;
- — an accessible rejects outlet for tailings inspection or sampling.



These features are resulting in peak capacities and high discharge consistencies at lowest horsepowers. Reject richness is readily controlled. Engineered simplicity is characteristic of the entire line of Impco Centrifugal Screens which require very little operating attention and mechanical maintenance.

* U. S. Patent No. 2,845,848.

IMPROVED MACHINERY INC.
NASHUA, NEW HAMPSHIRE

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In Canada, Sherbrooke Machineries Ltd., Sherbrooke, Quebec

Now a complete "wet lab" for the Paper Industry

Seriously though, we do maintain a **real** wet lab at our Menlo Park, New Jersey, Research Center. We're the only clay producer that offers such complete facilities — beater, recirculating white water system, sheet mold and all.

Total technical service and **highest** quality are the two big factors behind the success of our Edgar Paper Clays. In order to give you papermakers that **total** service, we believe a wet lab is required.

In addition, we have complete paper coating facilities, including a color preparation system — pilot coater, combining roll and trailing blade processes, with speeds up to 2,000 fpm — super calender — equipment for physical, optical and printing tests under controlled humidity conditions.

And — over 1,000 control tests per day in our mines and plants to assure you quality — day in and day out.

Have you used these facilities or visited them? You're cordially invited.

EDGAR PAPER CLAYS *from*

MINERALS & CHEMICALS PHILIPP CORPORATION

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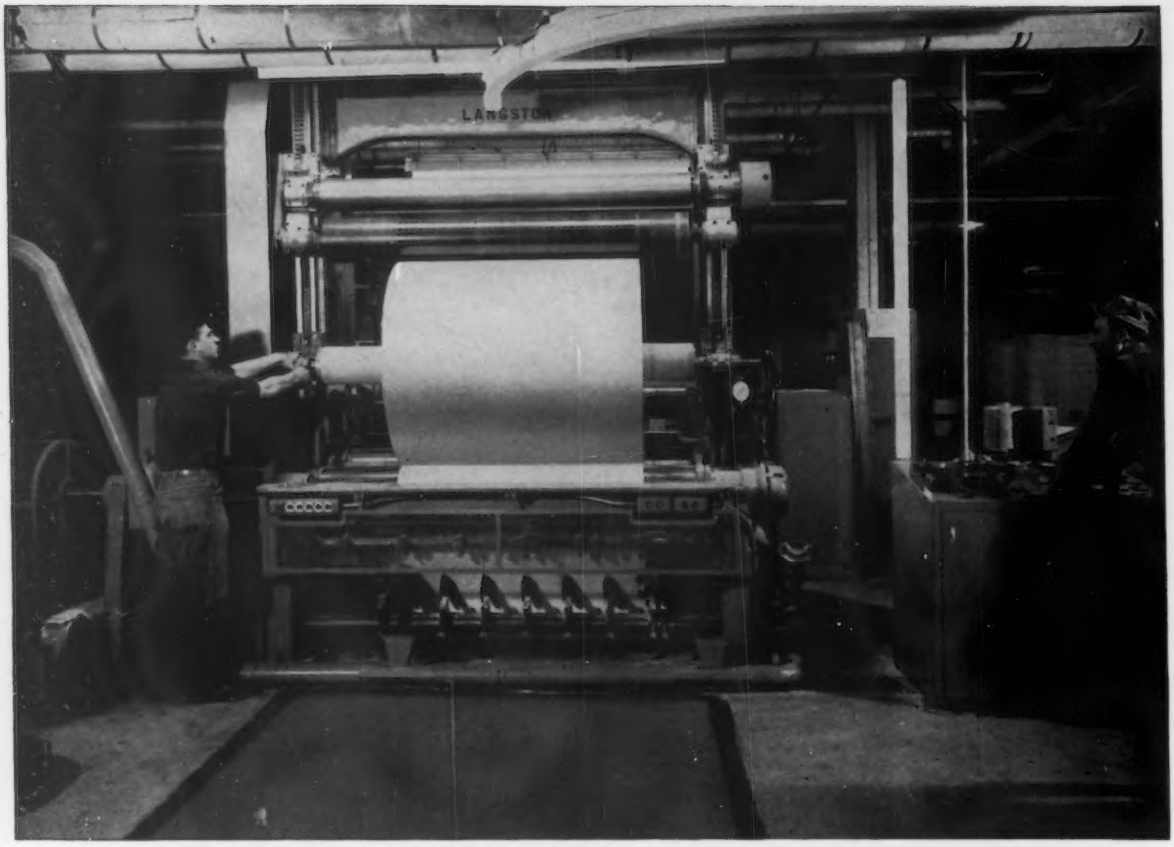


New 72-inch Type CA Langston Slitter and Winder in Marathon Corporation finishing room handles rolls up to 60 in. in diameter at speeds up to 1500 ft. per minute. Finished rolls are lowered by hydraulic drop shown in foreground.

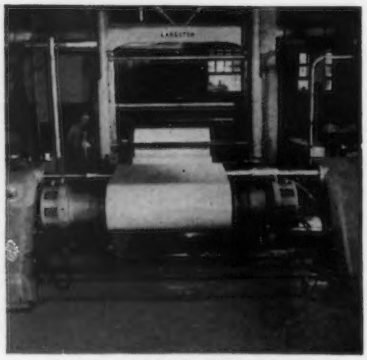
New Langston Slitter and Winder helps Marathon cut operating costs

This new Langston Slitter and Winder installation at Marathon Corporation's Rothschild, Wis., mill is already helping the company cut costs and speed processing of quality paper and board.

For example, the power-operated shaftless unwind stand virtually loads itself. No crew is needed to bull heavy shafts into place. And the Langston hydraulic roll ejector permits 1-man removal of finished rolls. These two features alone are saving Marathon several thousand dollars a year. Water-cooled Wichita-type air brakes can be operated from control console.

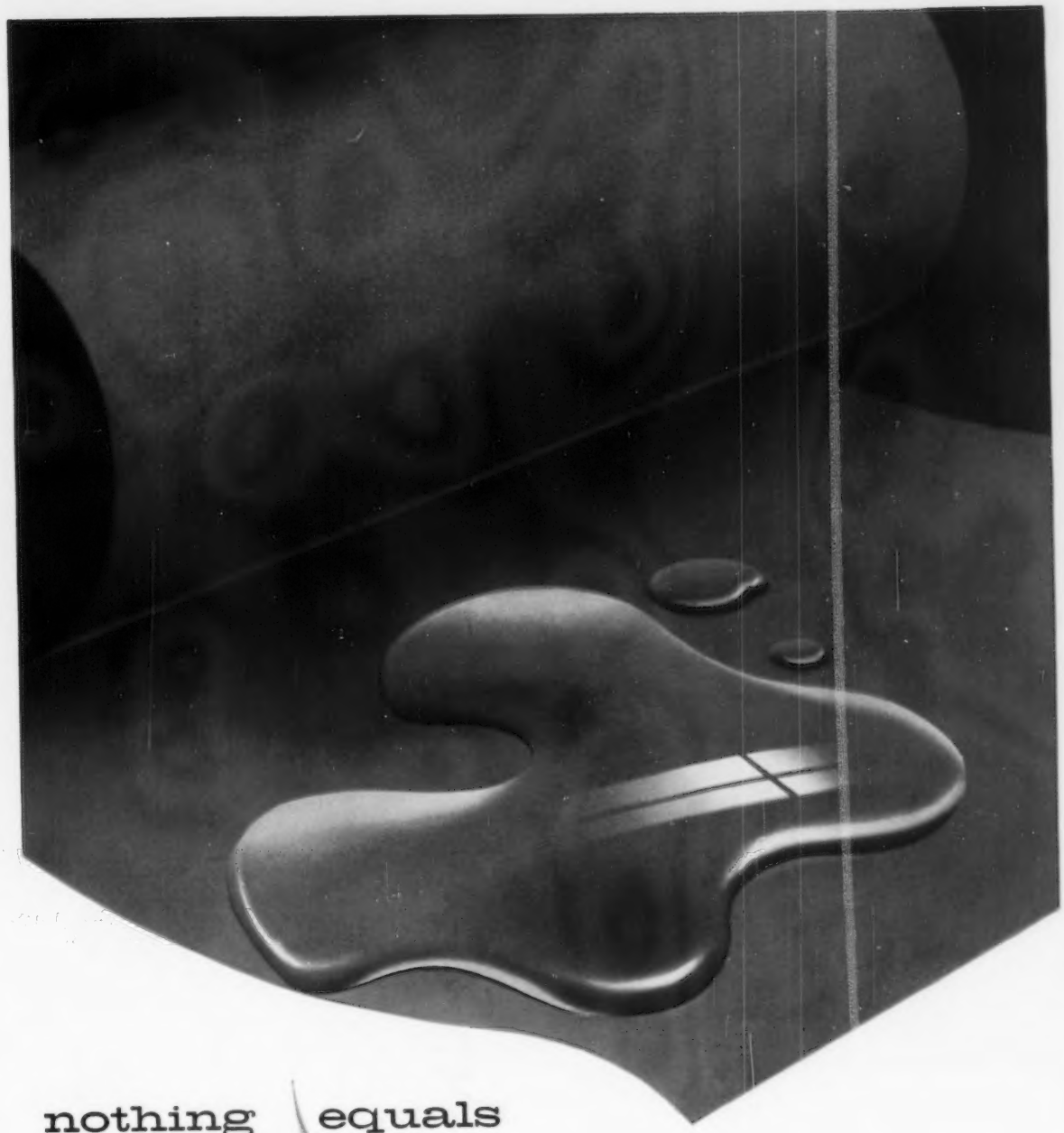
Besides effecting major operating economies, these Langston machines also pay off in higher quality rolls. The hydraulic rider roll control, for instance, automatically keeps nip pressure constant, regardless of the diameter or weight of the rewound roll. This insures rolls of uniform density with reduced tendency toward wrinkling or telescoping. The shear-cut slitters cut like scissors instead of a knife, shearing cleanly and keeping paper dust to a minimum. The resulting clean-edged, dustfree rolls are easier for customers to process.

Learn how you can benefit from the advantages of Langston Slitters & Winders. Write SAMUEL M. LANGSTON Co., 6th & Jefferson Sts., Camden 4, N.J.



Langston Shaftless Unwind Stand eliminates the time-consuming, back-breaking task of hoisting heavy shafts into place. The hydraulically actuated arms reach out, pick up the roll and lift it to running position—a 1-man, push-button operation.

LANGSTON leadership by design



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Pale in color and chemically unique, **Piccopale,** a polymerized petroleum resin, is versatile in its many uses. **Piccopale Resin** is inert and heat stable, and its hydrocarbon structure assures the utmost in water and moisture resistance.

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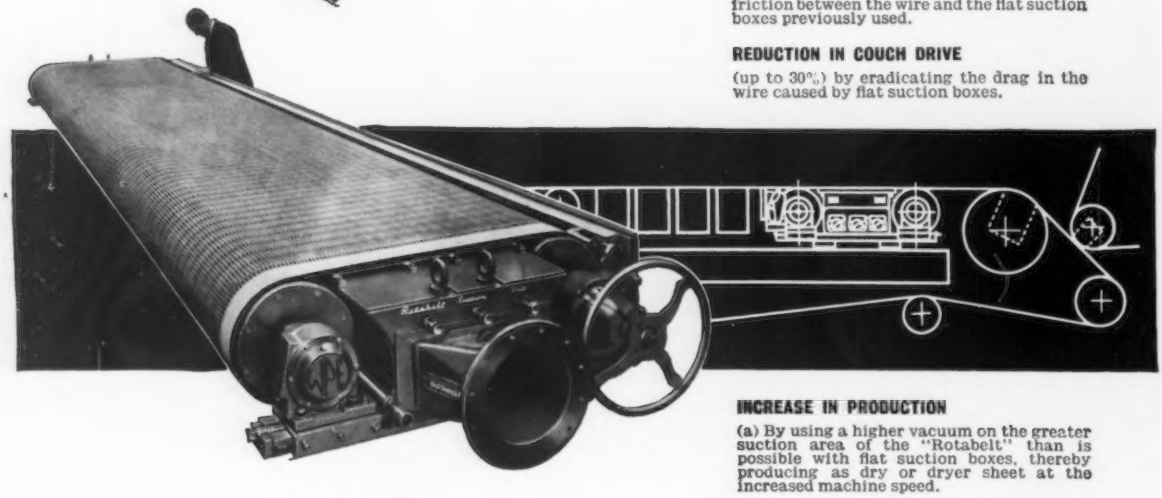
CONSIDER THESE ADVANTAGES

INCREASE IN WIRE LIFE

as great as 300% by the total elimination of friction between the wire and the flat suction boxes previously used.

REDUCTION IN COUCH DRIVE

(up to 30%) by eradicating the drag in the wire caused by flat suction boxes.



INCREASE IN PRODUCTION

(a) By using a higher vacuum on the greater suction area of the "Rotabelt" than is possible with flat suction boxes, thereby producing as dry or dryer sheet at the increased machine speed.

(b) By utilising for production down-time normally required for wire changing.

(c) Because of less wet breaks due to the even dryness of the sheet across the machine and the increase in machine efficiency.

REDUCTION IN MACHINE MAINTENANCE

due to fewer wire changes and less maintenance on flat boxes and ancillary equipment. The "Rotabelt" requires negligible maintenance.

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~~HIGH SPEED~~

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suction unit

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You may be searching for distinctive new shades to stimulate sales; perhaps you are seeking new methods of cutting color production costs, or possibly you're developing materials that require coloring agents with unusual properties....

Your GDC technical service representative has complete knowledge and experience of all paper-color processes. He is always available and ready to help you with color matching, formulation, testing or any other color problems you might encounter.

Whatever your plans, why not get in touch with him and see how our custom color service will benefit you? It's yours for the asking.

Have you seen a copy of our booklet "Dyestuffs for Beater Coloring" (GDC-329A)? It contains comprehensive information on our line of colors complete with application data and fastness properties. Write for your free copy today.

gdc dyes for paper—a co

APPLICATION

	Beater	Calender	Coating	
YELLOW				
Auramine	•	•		•
Brilliant Pure Yellow	•			
Chinoline Yellow	•	•	•	
Chrome Yellow	•		•	
Chrysophenine	•			
Direct Yellows	•		•	
Fast Light Yellow		•	•	
Fastusol® Yellows	•		•	
Hansa® Yellow	•		•	
Metanil Yellow	•	•		
Oxide Yellow	•		•	
Paper Yellow	•			
Permagen® Yellow	•		•	
Stilbene Yellows	•			
Tartrazine		•		
ORANGE				
Acid Orange	•	•	•	
Benzo Fast Oranges	•		•	
Chrysoidines	•			•
Direct Fast Oranges	•		•	
Fast Light Orange		•		
Fastusol Oranges	•		•	
Orange	•	•	•	
Permanent Orange	•		•	
Paper Orange	•			
BROWN				
Benzo Brown	•			
Bismarck Browns	•		•	
Fastusol Browns	•		•	
RED				
Benzo Bordeaux	•			
Benzo Fast Scarlets	•		•	
Benzo Rhoduline® Red	•		•	
Brilliant Croceine	•	•	•	
Direct Pink	•			
Direct Reds	•			
Fast Red	•			
Fastusol Pink	•		•	
Fastusol Reds	•		•	
Fastusol Scarlet	•		•	
Magenta	•	•	•	•
Oxide Red	•		•	
Paper Red	•			
Paper Scarlets	•			
Permagen Red	•		•	
Permanent Carmine	•		•	
Rhodamines	•	•	•	•
Safranine	•	•	•	•
Solar® Pink	•		•	
Solcarbo® Pink	•		•	

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complete color spectrum and whiter "whites"

	APPLICATION			CLASS			
	Beater	Calender	Coating	Basic	Acid	Direct	Pigment
VIOLET							
Brilliant Benzo Violet	•				•		
Crystal Violet	•	•		•			
Ethyl Violet	•	•		•			
Fastusol Violets	•				•		
Formyl Violet	•	•			•		
Methyl Violet	•	•		•			
Solar Coating Violet			•			•	
Solar Violet	•		•			•	
BLUE							
Benzo Azurine	•		•			•	
Benzo Blues	•		•			•	
Benzo Sky Blue	•		•			•	
Brilliant Benzo Blue	•		•			•	
Brilliant Wool Blue		•			•		
Fast Bond® Blues	•				•		
Fastusol Blue	•		•			•	
Fastusol Turquoise Blue	•		•			•	
Heliogen® Blues	•		•				•
Methylene Blue	•	•	•	•			
Neptune® Blues		•	•		•		
Paper Pure Blue	•	•	•	•			
Rhoduline Blues	•	•		•			
Solar Blues	•		•				•
Solar Coating Blue			•				•
Solcarbo Blues	•		•			•	
Soluble Blues	•				•		•
Victoria Blue	•	•	•	•			
Victoria Pure Blue	•	•	•	•			
GREEN							
Benzo Greens	•					•	
Brilliant Green	•	•	•	•			
Fast Bond Green	•				•		
Fastusol Greens	•					•	
Guinea Green	•	•	•		•		
Heliogen Greens	•		•				•
Heliogen Viridines	•		•				•
Naphthol Green		•	•		•		
Neptune Green	•	•	•		•		
Pigment Green	•		•				•
Solar Green	•		•				•
Victoria Green	•	•	•	•			
BLACK							
Acid Black		•			•		
Basic Black	•	•		•			
Diamine Black	•		•			•	
Diazo Black	•		•			•	
Direct Deep Black	•		•			•	
Fastusol Greys	•		•			•	
Naphthylamine Black	•	•	•		•		
Nigrosines	•		•			•	
Permanent Black	•		•				

Partial list of colors and types available from GDC

or the paper industry, offers the newest colors available in the widest variety of
o satisfy all individual requirements. Write direct for complete information and
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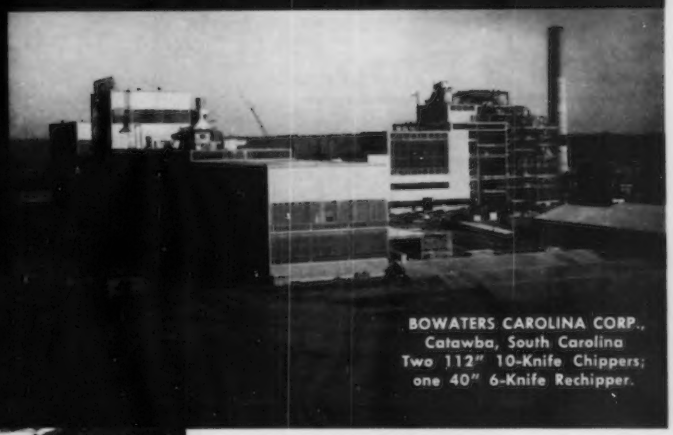
One MURCO 110" 15-Knife Chipper
equipped with a Unl-Chip knife mounting

BARRETT DIVISION
Sunbury, Pennsylvania
One MURCO 84" 10-Knife Chipper
equipped with a 16" diameter spout

MURCO

Heavy Duty Equipment!



BOWATERS CAROLINA CORP.,
Catawba, South Carolina
Two 112" 10-Knife Chippers;
one 40" 6-Knife Rechipper.

S. D. WARREN COMPANY, Westbrook, Maine.
Two MURCO 90" 10-knife chippers;
one MURCO Rechipper.

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D. J. MURRAY
MANUFACTURING CO.
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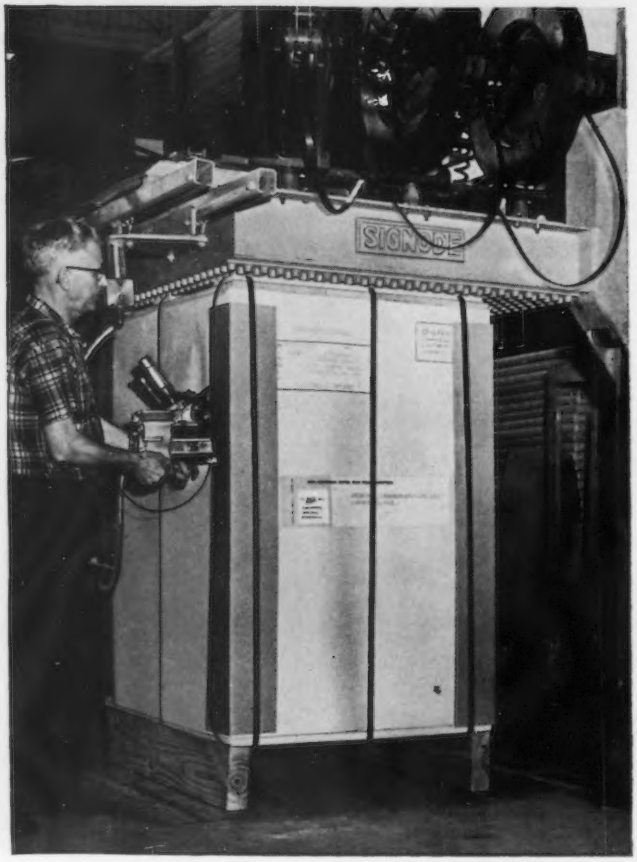
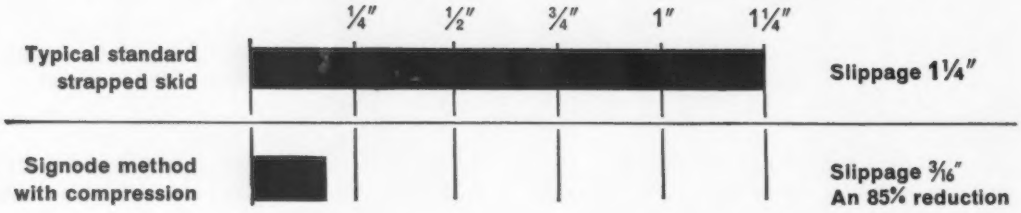
Compression strapping the Signode way reduces paper slippage 85%



This skid of paper is being strapped on a new Signode CS20-1 press which compresses the load while the worker applies steel strapping with a fast new Signode power tensioner-sealer tool. The paper will arrive at destination in top condition. The mill has improved its product, yet reduced its costs per skid for time and materials!

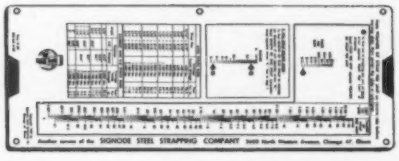
Here's Proof!

PAPER SLIPPAGE, STRAPPED PAPER SKIDS, AFTER 5 IMPACTS



Write today for all the facts on this important new development from Signode.

New free steel strapping calculator helps you buy steel strapping at least cost according to your needs, and shows new strength figures for Signode steel strapping. Write for yours.



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Need supplier with know-how Call Marathon

A DEPENDABLE SOURCE FOR QUALITY CONVERTING MATERIALS

The ablest personnel in the paper business staff Marathon operations in all parts of the country. Mill managers, technicians, woodlands supervisors, engineers—all know their business thoroughly. Their talents are at your service.

Keep Marathon in mind for pulp, printing papers, paperboard and specialty materials.

Pulp, Paper and Paperboard Department

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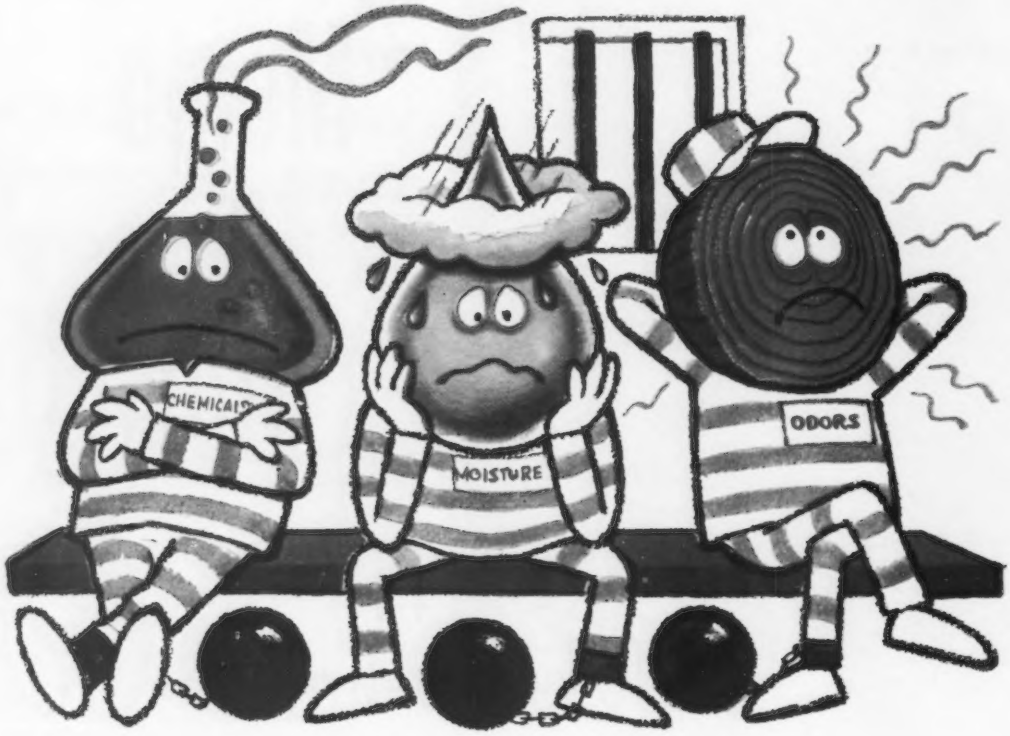

NEW LATEX FOR COATING

RESYN® 3600

POLYVINYLIDENE CHLORIDE

RESYN 3600 is a water dispersed polyvinylidene chloride that promises a revolution in protective coatings. For the first time, it combines exceptional barrier properties with simple low cost application by high speed coating machines or spraying. It offers important new advantages:

MOISTURE—Moisture vapor transmission is 2½ to 5 times lower than that of polyethylene. **ODORS**—Resistance to transmission of common gases 1000-2000 times greater than polyethylene. **CHEMICALS**—Almost complete non-reactivity to concentrated acids, solvents, alkalies and other corrosive materials. Grease and oil penetration is nil. Fire retardancy is excellent.

RESYN 3600 can be coated on paper, paperboard, plastic and other substrates. It also may be applied to fibers. It is of interest to a broad range of industries, including food and other types of packaging, converting, chemical, and textile.

Experimental lots of RESYN 3600 are now available. A 14 million lb. plant will be on stream this fall. Write for information.

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Trends

Paper Steady, Board Off In September

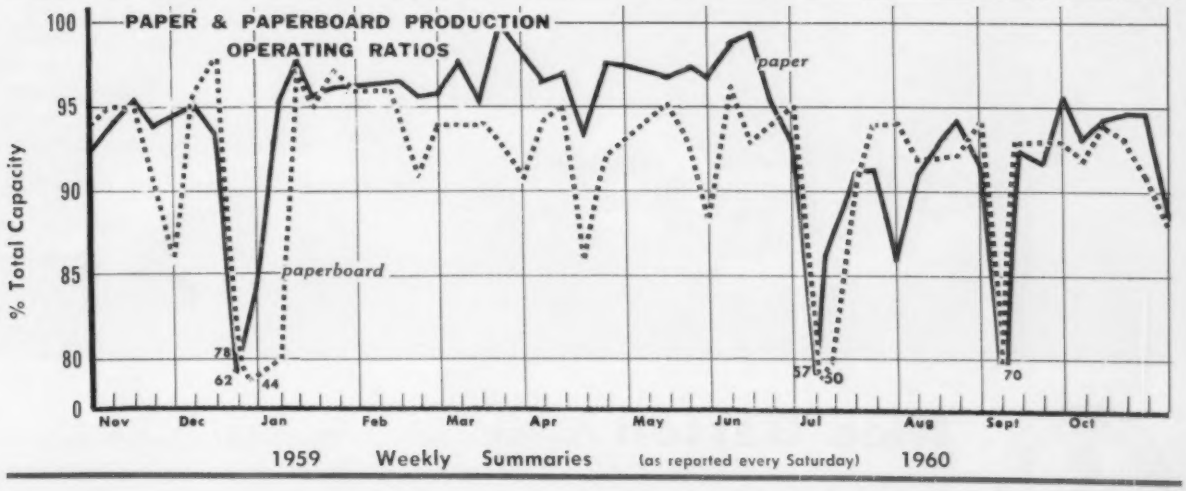
Paper and board production in September was 2.8 million tons, 1% below the same month last year. Paper output was approximately the same as in September 1959 while board production was off 2%. This is based on Bureau of the Census figures just released.

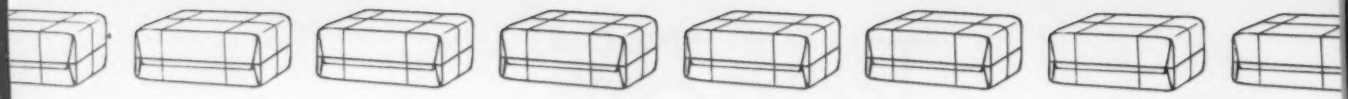
Folding Boxes Off From September

Folding box shipments in October dipped slightly from the previous month, but were fractionally above the October 1959 level, according to the Folding Paper Box Ass'n. Industry volume for October is estimated at $85.2 million, compared to $84.6 million in October last year. Shipments in the first 10 months of 1960 total $786.9 million, compared to $784.9 million in the same period last year. Tonnage of cartons shipped during October amounted to 205,200 tons, down 2,600 tons from the 207,800 tons shipped in the same month of 1959.

Board Production Down Slightly

Average weekly production of paperboard is running approximately only 400 tons under the record level established in 1959, Warren F. Wescott, Ass't. Statistician, National Paperboard Ass'n., reported at the Association's 28th Annual Meeting. 1959 production averaged 307,100 tons per week as compared with 306,700 tons per week in 1960. Production of containerboard is 0.2% higher than 1959 and production of boxboard is only 0.5% lower than 1959 figures. "While this year's demand has been below earlier expectations of the industry, orders booked here have been comparatively close to the record highs of 1959," Mr. Wescott stated. "This year, while the total economy has not reached the heights anticipated, and in some industries has lagged considerably behind 1959, our figures show that one of the bright spots is the performance of the paperboard industry.





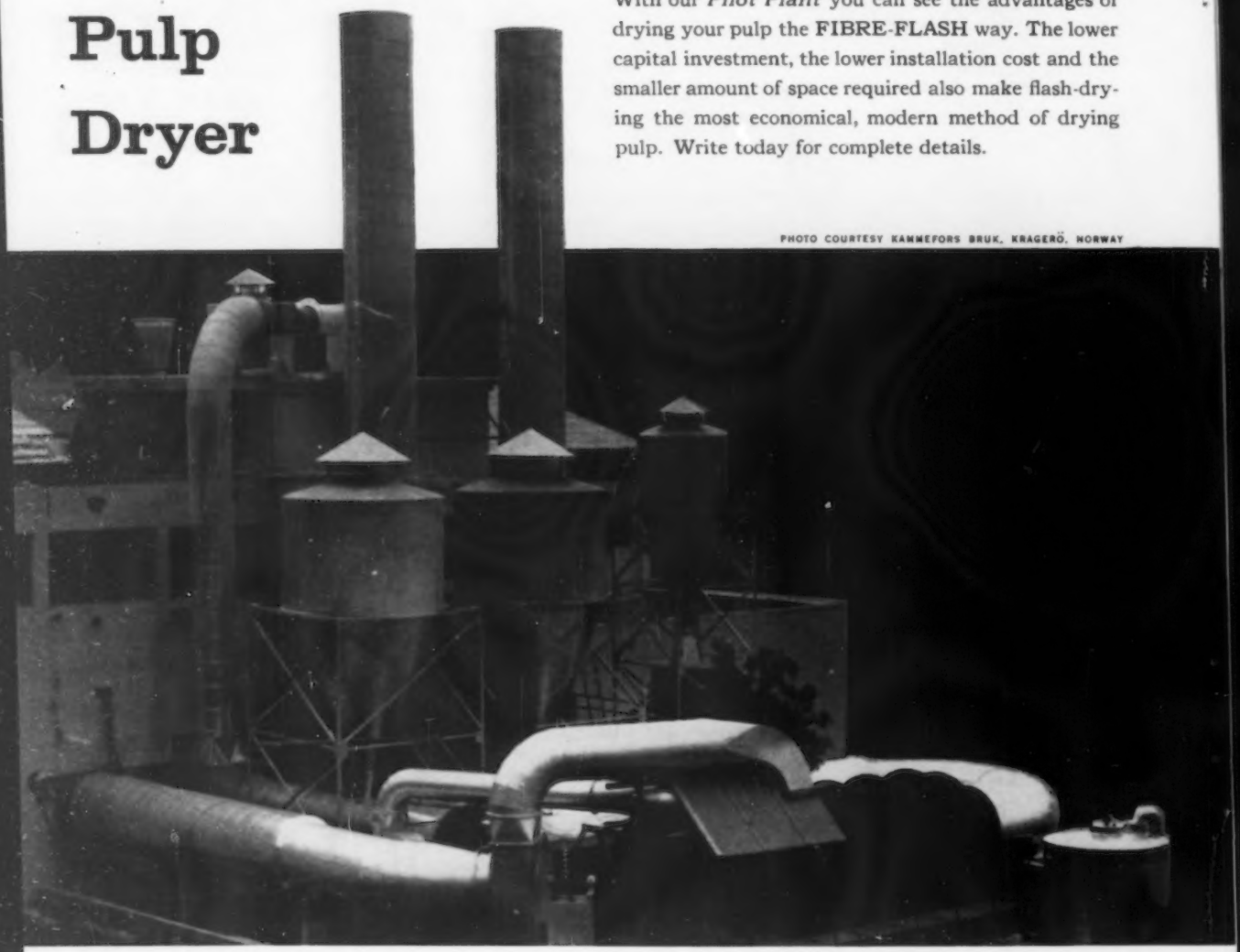
Produce Pulp at less cost per ton with Rice Barton's Fibre-Flash Pulp Dryer

Within 100 mi. of Oslo this pulp mill is producing 100 T.P.D. at impressively low costs.

From stock chest to baler the **FIBRE-FLASH** system is mechanically far simpler, has a minimum of moving parts and costs less to operate and to maintain than conventional pulp dryers. It conserves every physical characteristic of pulp and is currently being used successfully for both groundwood and chemical pulps.

With our *Pilot Plant* you can see the advantages of drying your pulp the **FIBRE-FLASH** way. The lower capital investment, the lower installation cost and the smaller amount of space required also make flash-drying the most economical, modern method of drying pulp. Write today for complete details.

PHOTO COURTESY KAMMEFORS BRUK, KRAGERÖ, NORWAY



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FOURDRINIERS, PRESS SECTIONS, DRYER SECTIONS, CALENDERS AND SUPERCALENDERS, REELS, WINDERS, HEAD BOXES, SIZE PRESSES, BREAKER STACKS, DIFFERENTIAL DRAW CONTROL DRIVES AND CONE PULLEY DRIVES, PULPING EQUIPMENT, HIGH VELOCITY AIR DRYERS, TRAILING BLADE COATERS, FIBRE-FLASH DRYING SYSTEMS

PJT PAPER TRADE JOURNAL

WEEK OF NOVEMBER 21, 1960

New Improvements for Brown Co. Mill

A new pressure headbox for Brown Co.'s 196-inch towel paper machine at the company's Cascade mill in Gorham, N.H., has been authorized by the board of directors. Installation is scheduled for April or May, 1961.

The new headbox, on order from Valley Iron Works, is part of Brown Co.'s modernization program designed to increase machine speeds with improved sheet quality. The machine, Brown's largest, supplies creped kraft paper for Nibroc towels and wipers.

Cost of the installation is estimated at $150,000.

Brown Co. will install a new winder on its No. 3 paper machine at the company's Cascade mill as part of a progressive improvement program which is currently being followed.

The winder replaces an older one which experience has shown cannot handle output from No. 3 machine now that it has been speeded up. A large part of production from this machine is devoted to the Berlin, N.H. Company's offset printing papers and envelope paper.

Sonoco Dedicates Research Laboratories

Sonoco Products Co. dedicated its new Research Laboratories Building November 11 in memory of Dr. James Edward Mills, Sonoco's first chief chemist and research director. Dr. Mills, who died in 1950, was a recognized authority on paper chemistry. He was the holder of the Herty Medal, presented for outstanding contributions to chemistry in the Southeast and also a 50 year member of the American Chemical Society.

This new research center built at a cost of over a quarter million dollars will house the most complete and up-to-date laboratory in the cone and paper tube industry. The new building will have three times as much space as the present facilities. It was designed so a second floor or additional wings can be added at a minimum expense. Included are 10 laboratories, each with a variety of equipment to give Sonoco the facilities for more extensive experimentation and research. New features include a paper pilot plant and a constant temperature control room.

Logan Robertson Elected To Champion Board

Unbroken continuation of one of America's notable industrial family lines has been announced by the board of directors of The Champion Paper and Fibre Co. with the resignation of Reuben B. Robertson from the board and election to the board of his son, Logan T. Robertson, Asheville, N.C., a nationally known physician and consultant on medical programs to industry, civic groups, and government. At the same time, the directors of the 67-year-old Hamilton, Ohio, paper manufacturer re-appointed the senior Mr. Robertson as a director emeritus. He continues also as honorary chairman of the board.

Hudson Acquires Stock of Angel Soft Tissue Mills

Hudson Pulp & Paper Corp. has acquired all of the outstanding stock of Angel Soft Tissue Mills, Inc., in Thomson, N.Y., for an undisclosed sum. William Mazer, Hudson president, has announced.

Plans are for continuation of all present Angel Soft operations under Angel Soft management as a separate company. The present president of Angel Soft is Edward J. Gould. J. H. Kila is the general manager.

Angel Soft has only the one mill in Thompson. It has the capacity to produce 70 tons of facial, toilet, and napkin tissue per day on two 134-inch and one 152-inch Yankee machines.

C. G. Olsson

Paperboard Association Officers Elected

Sture G. Olsson, president and general manager, The Chesapeake Corp. of Virginia, was elected president of National Paperboard Ass'n. at the group's 28th annual meeting on November 16. Leo H. Schoenhofen, senior vice president and director, Container Corp. of America, was elected a vice-president of the association. Howard W. Morgan, vice president, Weyerhaeuser Co., was also elected a vice president.

Paper and Paperboard Production

The American Paper and Pulp Association reported the ratio of the United States paper production to mill capacity for the week ending November 5, 1960, at 88.4 per cent, compared with 95.3 per cent, revised, for the preceding week. The ratio was 94.6 per cent for the corresponding week a year ago.

The National Paperboard Association reported the paperboard production ratio for the week ending November 5, 1960, at 88 per cent, compared with 91 per cent for the preceding week and 94 per cent for the corresponding week a year ago.

(Detailed Statistics on page 65)

PAPER PEOPLE

D. C. Cullingham

Cullingham Moves To Paris

D. C. Cullingham has joined the Paris office of Parsons and Whittemore to assist in the design of a sulphite dissolving pulp mill. Mr. Cullingham who is a graduate of the University of Toronto was employed at the Kipanea mill of Canadian International Paper Co. for nine years. He then participated in the start-up of the Alaska Lumber and Pulp Co. mill in Sitka, Alaska, as process engineer.

Oxford Names Research Staff Administrator

Theodore H. Geiger has been appointed staff administrator of the research department of the Oxford Paper Co.

Mr. Geiger received a bachelor degree in chemical engineering from Tufts University. He joined Oxford in 1934. He has served in various positions of responsibility in the Research Department during the past 20 years.

Haselow Joins Mosinee Plant Engineering Staff

Fred A. Haselow has joined the plant engineering staff of Mosinee Paper Mills Co. He formerly was chief engineer of Charmin Paper Mills at Green Bay, Wis.

Mr. Haselow is a graduate of the University of Wisconsin and has served for four years in the Navy.

Huelat, Blake, Moffitt & Towne, V-P to Retire

Walter W. Huelat, vice president of Blake, Moffitt & Towne, and manager, southern region, is planning to retire in April 1961. In making the announcement, Arthur W. Towne, president, drew attention to Mr. Huelat's career of more than 50 years service.

To succeed Mr. Huelat as manager, southern region, William D. Champion, assistant to the executive vice president, has been appointed. A member of BM & T since 1939. Mr. Champion will move to Los Angeles in early January and assist Mr. Huelat until the latter's retirement.

At the same time, Rolland R. Whiteman, executive vice president, announced the appointment of Vernon C. Pusheck to the company's new position of general sales manager, industrial papers. Mr. Pusheck brings to his San Francisco assignment a 30-year background in industrial paper sales.

Promotion of Four Announced by Mead

Four Mead corporation men have been promoted to new positions according to Chillicothe division manager Hoyt Wheeland.

William Gallaugher has been named superintendent of finishing operations. He succeeds George Ruth, Jr., who recently became assistant production manager at Chilpaco. Mr. Gallaugher was formerly assistant superintendent of finishing operations. He began work with Mead in December 1922.

Orval Hines, formerly a tour foreman in the calenders and rewinders department, has been promoted to the assistant superintendent's position which was vacated by Mr. Gallaugher. Mr. Hines has been a Mead employe since September 1928.

Replacing Mr. Hines as tour foreman in the calenders and rewinders department is Frank Davis, Jr. Mr. Davis has been assistant tour foreman in that department since last August. He has been associated with Mead since August 1943.

The new assistant technical director for the Chillicothe Division is C. Duane Coates. Mr. Coates was previously assistant coating superintendent at Mead's Escanaba (Michigan) Division. Before moving to Escanaba in May 1958 he worked for Mead Research and the Chillicothe Division, dating back to June 1951.

Champion Paper & Fibre Elects Executives

Champion Paper and Fibre Co. has elected Frederick Dau as vice president for administration, Stuart Skowbo as vice president and treasurer and L. Clair Nelson, of the corporation's legal staff, as assistant secretary. Also announced was the appointment of Lewis Clark Thomson as special assistant to the president, Karl R. Bendetsen.

Mr. Dau, new vice president, administration, has served at Champion successively as special consultant on inventory control and as group executive, administration.

Mr. Skowbo, new vice president and treasurer, came to Champion from the post of senior vice president, treasurer, and director of Brown Co.

Maynard Conklin, formerly treasurer, continues to serve in the capacity of special consultant to the president.

Lewis Clark Thomson, a Champion director since 1944, has served as legal counsel, head of the legal department, and secretary of the company. He will continue as director in addition to his new duties as special assistant to the president.

L. Clair Nelson, new assistant secretary, entered the Champion legal department in 1955.

PCA Names Central Region General Sales Manager

John A. Oakes, of Manistee, Mich., has been appointed general sales manager-paperboard division, central region, Packaging Corp. of America.

Mr. Oakes formerly was sales manager of the company's Filer City mill. His offices now will be located in Grand Rapids, Mich.

Paper Specialist Joins Rayonier Technical Service

Rayonier, Inc., has appointed Robert M. Mayer to the staff of its Technical Service department.

A specialist in papers, Mr. Mayer came to Rayonier via the Carolina division of Champion Paper & Fiber at Canton, N. C. There he had been technical assistant on the 246-inch fine paper machine.

Mr. Mayer will concentrate on assisting customers in all aspects of paper technology.

NEWS OF CONVERTERS

Bemis Advances Porter And Roquemore

Daniel R. Porter, Jr., has been named sales service manager for the St. Louis paper specialty plant, Bemis Bro. Bag Co.

Mr. Porter, who joined the company in 1955, received sales training at the St. Louis plant and was assigned as a paper specialty salesman at the firm's Crossett, Ark., paper specialty plant, in 1956. In 1958, he joined the New Orleans sales division as a paper specialty representative.

In his new assignment, Mr. Porter will be responsible for coordination of sales for paper specialty products manufactured at the St. Louis plant, including mattress bags, airline refuse bags, outdoor storage covers and a newly-introduced laminated truck tarp.

Glenn F. Roquemore has been appointed to the newly created position of project manager at the Bemis Bro. Bag Co. department of Physical Research, Minneapolis.

Mr. Roquemore, who has an extensive background in plant management, applied and basic research, will be responsible for administration and coordination of projects in the pilot stage at the company's department of Physical Research.

Prior to joining Bemis, Mr. Roquemore served as vice president, manufacturing, for Burlington Mills, Inc., Burlington, Wis. From 1948 to 1958, he was general manager for the Midcontinent Adhesives Co., Grove City, Ohio.

Sutherland Paper Announces Promotions

Donald C. Smith has been appointed as manager of administrative services for the Sutherland Division of KVP Sutherland Paper Co.

In this new capacity, Mr. Smith will be assuming responsibility for the labor relations, personnel, motor truck, traffic, and office services functions. Responsibility for these functions was formerly held by Samuel A. Angotti, who resigned as vice president of KVP Sutherland, effective November 30.

Mr. Smith was personnel manager for the Sutherland Division prior to his new appointment. He joined the Sutherland Division in February 1952 after 12 years as a secretary of the Kalamazoo Y.M.C.A.

Charles B. Hammond has been appointed personnel manager for the Sutherland Division. He joined Sutherland in 1953 after several years of experience in the personnel field, and was Sutherland's employment supervisor prior to his new appointment.

Evan Gauthier, formerly training director for the Sutherland Division, has been appointed employment supervisor, filling the vacancy created by Mr. Hammond's promotion.

McClure Made Rap-In-Wax Roto Sales Manager

Eugene S. McClure has just been appointed rotogravure sales manager of The Rap-In-Wax Co. of Minneapolis, according to A. E. Sloan, general sales manager. Mr. McClure's duties will be national in scope, and will include supervision of special accounts where Rap-In-Wax's rotogravure printing facilities are being utilized in the packaging industry.

Riegel Consolidates Folding Carton Sales

Reigel Paper Corp. has announced the appointment of Jack E. Hutchinson as manager of its newly created Folding Carton Sales department. For the time being his headquarters will be at Riegel's Bloomer Division in Newark, N. Y.

Mr. Hutchinson was formerly sales manager of Bloomer Bros. Co. which recently became a division of Riegel. In his new position, he will be responsible for the sale of all cartons produced at the company's Bloomer and Quality Divisions.

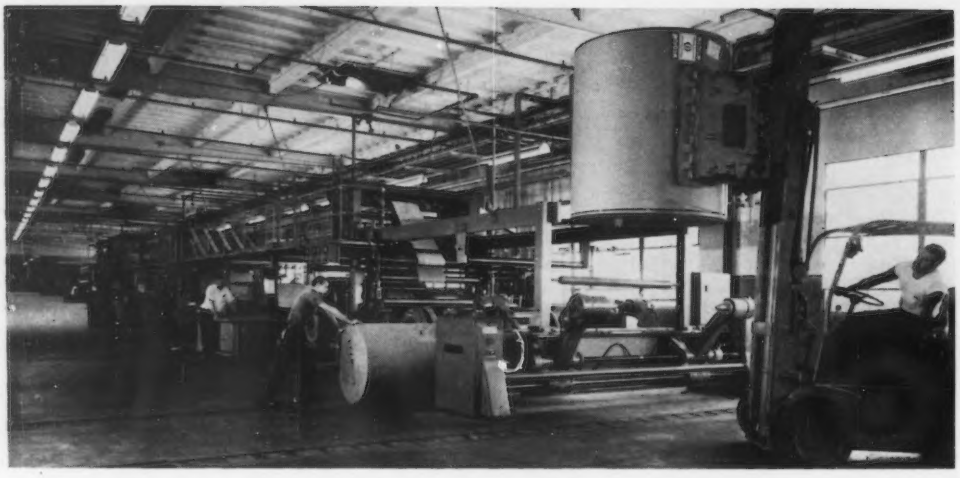
Riegel's Lassiter Division, under the sales management of John Shea, will continue to market its own production of folding cartons.

Hammermill Makes Offer For Coast Envelope Stock

Hammermill Paper Co., has announced that holders of all of the common stock of Coast Envelope Co. have agreed to accept an offer by Hammermill Paper Co. to issue 122,838 common shares of its common stock in exchange for Coast Envelope common stock.

The Coast Envelope Co. manufactures a complete line of envelopes at its two plants in Los Angeles and San Francisco, Calif., and in addition manufactures book cover products at its Los Angeles facilities. Sales of Coast Envelope are over $6,000,000 annually.

"What's the matter this time, Charlie?"



WORKERS load the new corrugator which is one of the most versatile in the field.

Owens-Illinois Dedicates Its Biggest Box Plant

National Container Corp. of California, a subsidiary of Owens-Illinois, has dedicated its newly expanded Los Angeles corrugated box plant, the company's largest. Capable of producing four million square feet of corrugated board every 24 hours, the plant is two and one half times the size of the facility as it existed in 1950.

Local industrial leaders and company officials from Los Angeles and Owens-Illinois' Toledo, Ohio., general offices took part in dedication ceremonies at which more than 500 customers and other guests toured the plant. Representing an investment in excess of $5 million, the 300,000-square-foot plant is located on a 10½-acre site in the heart of the Los Angeles central manufacturing district.

TWO CORRUGATORS IN OPERATION

It is equipped with the latest corrugated equipment, some of it developed specifically for this plant. A new corrugator, which can handle an 85-inch wide roll of paper stock, is called by its manufacturer, the Langston Co., "one of the most versatile corrugating units ever built." A second corrugator can produce corrugated board 78 inches wide.

The Langston corrugator has three completely independent single facers (A-, B-, and O-I C-flute) each equipped with its own shaftless mill roll stands, preheaters and preconditioners. This makes it possible to run any type of double face or any combination of double wall board. It can also produce laminated board.

OTHER FEATURES

The arrangement of tandem triplex slitter-scorers, equipped with automatic side register control, is the only one of its kind on the Pacific Coast. Each single facer is equipped with hydraulic loading of top corrugating and pressure roll. All single facers have a special oil mist lubrication system for the corrugating rolls.

For more exact control of adhesive application, each has a mechanical, tapered speed, glue roll drive and the latest improvements in adhesive application. All glue machine stations have hydraulic rider roll controls to minimize board caliper loss. The glue machine was specifically designed for the Los Angeles plant and has the latest advancements in controls and automation.

The plant's second corrugator is a 78 inch machine with speeds up to 475 board feet per minute. The Langston has a top speed of 675. Other plant equipment includes: Hooper and S & S partition making equipment; H&C and S & S flap cutters; Universal and S & S eccentric slotters; S & S automatic die cutter and platen and Miehle die cutters.

FINISHING EQUIPMENT

Finishing equipment includes a Swift 103 inch automatic folder-gluer, a Bostitch 66 inch automatic folder-gluer, an S & S automatic ZB folder taper, three Universal semi-automatic tapers, three Bostitch "485" stitchers, a Bostitch "585" stitcher, a Bostitch automatic folder stitcher, a Universal Jumbo taper, a General Jr., taper, an Acme strapper and a Signode strapper.

The plant has eight printer-slotters including: one 184 inch S & S rotary press, one 140 inch Hooper, three 78½ inch Hoopers, one 66 inch Hooper and two 103 inch Hoopers. All printer-slotters are equipped with the latest type of sheet stackers. Slitters include two Universals, a 90 inch 2-bar and an 80 inch 6-bar, and three S & S's, a 96 inch 2-bar, a 96 inch 4-bar and a 120 inch 4-bar.

The plant's boiler room has two gas-oil fired boilers with ratings of 500 h.p. and 250 h.p.

The starch room contains one 1,000-gallon mixer, two 3,000-gallon reservoir tanks for mixes and one 2,000-gallon storage tank for weather adhesive.

The plant is equipped with a Cyclomatic Balemaster, which bales scrap received from ten individual waste pick up points. The entire system was engineered for this particular plant.

Another box plant of National Container of California is located in Oakland. Owens-Illinois operates a total of 21 corrugated box plants and has a total of 64 plants manufacturing glass, plastic and paper products.

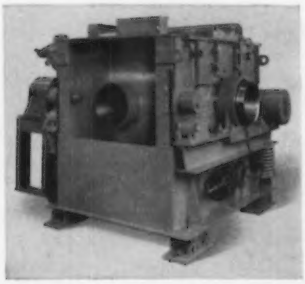
Over 3000 Tons a day of DEINK is making better, brighter paper, and causing fewer pinholes and breaks, because it is

BIRD VIBROTOR®

Screened

Vibrotor Screens are proving extraordinarily effective for removal of floating plastics, rubber, latex, cellophane, tinsel, undissolvable inks, ink balls, asphalt and minus 40 mesh specks.

With .012″ slotted plates on 1.9% stock a Vibrotor Screen puts through 100 tons or more of deink per day.



And that's not all:

- on unbleached kraft with a permanganate number of 28, through .012″ plates at 1.7% consistency the Vibrotor Screen delivers up to 60 tpd
- on unbleached sulphite at 1.5% — 55 tpd
- on bleached sulphite at 1.6% — 68 tpd
- on bleached sulphite at 1.9% — 80+ tpd
- on unbleached hardwood at 1.5% — 100+ tpd

May we mail you the new Bulletin on the Bird Vibrotor Screen?

BIRD
MACHINE COMPANY

SOUTH WALPOLE, MASS.
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CANADIAN INGERSOLL-RAND COMPANY, Limited, Montreal

At L'Anse, on Michigan's Upper Peninsula . . .

Celotex Starts Up World's Most Automated Fiberboard Mill

Only 90 operating personnel are required to produce 200 tons of insulating board daily. Significant features include world's widest fiberboard fourdrinier, and a single continuous finishing line.

Harry Dyer,
Assistant Editor,
Paper Trade Journal

Official dedication of the new Celotex Corp. mill in L'Anse, Mich., brought on-line "the world's most automated and mechanized fiberboard plant." The L'Anse plant, company officials said, is the only operation of its kind in which a fiberboard product can travel all the way through manufacturing and fabrication into packaging without leaving the production line.

The extent to which automation pervades the L'Anse operations was aptly symbolized by the dedication ceremony, last September 24. Instead of snipping the traditional ribbon, Henry Collins, Celotex president, sawed through a strip of fiberboard, tripping a switch that automatically opened the doors to the new plant.

Located at the Southern shore of Lake Superior, on Keewenaw Bay, the L'Anse plant has a daily production of 500,000 square feet of one-half inch insulation board products —about 200 tons per day. Operating at full capacity, the L'Anse plant employs about 150 persons of which about 90 are operating personnel. The remainder are utility, maintenance and administrative people.

The L'Anse plant produces such products as acoustical and decorative ceiling tile, insulating sheathing, insulating roof deck, and roof insulation for distribution principally throughout ten north central states.

Total plant area is 260,000 square feet in interconnected units that includes the 10,000 sq. ft. pulp mill, 11,500 sq. ft. board machine building, 36,000 sq.ft. dryer building; and a 157,500 sq. ft. fabrication warehouse. In addition there are a

separate waste paper processing warehouse; a woodroom and an administrative building. Generally, the buildings are constructed of concrete block and structural steel with Cemesto structural insulating panels (a Celotex fiberboard core product). Metal deck roofing is used except over the pulp mill and board machine where pre-cast concrete slabs are used.

Construction of the L'Anse plant was under the general supervision of George Burt, Celotex chief engineer, Marvin Dixon, assistant chief engineer, and Oscar Olsen, field superintendent, now retired. Turner Construction Co., was the general contractor for the job. Incorporated into the design of the plant is provision for the ready expansion of production in the future.

The L'Anse facility, which increases Celotex fiberboard production capacity about 25 per cent, marks the eleventh Celotex plant in the United States. At Marrero, La., Celotex's original plant, now the worlds' largest fiberboard mill, produces a complete line of fiberboard building products. Other Celotex mills manufacture a long-line of well-known mineral-fiber insulation and acoustical products, fiberboard, shingle, roofing, and gypsum products.

FRANZ J. ALFEIS, plant manager, has been in the L'Anse position since July, 1957. His extensive background includes assignments with fiberboard mills in Madison, Ill. and Metuchen, N. J. He held various positions with Ruberoid Co. prior to joining Celotex Corp.

Wood Handling

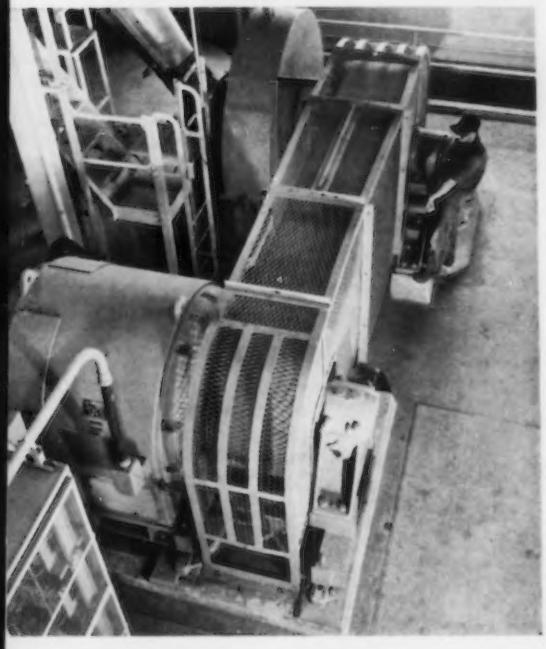
Celotex owns 185,000 acres of woodlands in Baraga and surrounding counties and has perpetual cutting rights on an additional 57,000 acres. These timberlands are expected to yield most of Celotex's annual 40,000-cord pulpwood requirement. Species utilized consist of the hardwoods, principally aspen, birch and maple. In itself, says Celotex, the use of the dense hardwoods, such as maple and birch, in the production of fiberboard is relatively new. Indications are that eventually 60 per cent or more of the total wood used at L'Anse may be comprised of these dense hardwoods. Softwoods are not used, nor is their use in substantial quantities anticipated.

Pulpwood arrives in trucks and in open-top gondola railroad cars from within a 50-mile radius of the mill. Two Pettibone Cary-Lifts, equipped with swivelling grapples, unload the 100-inch sticks, a cord at a time, and tier the pulpwood in the 15,000-cord capacity woodyard. This is sufficient wood to feed the mill for four months under normal operating conditions.

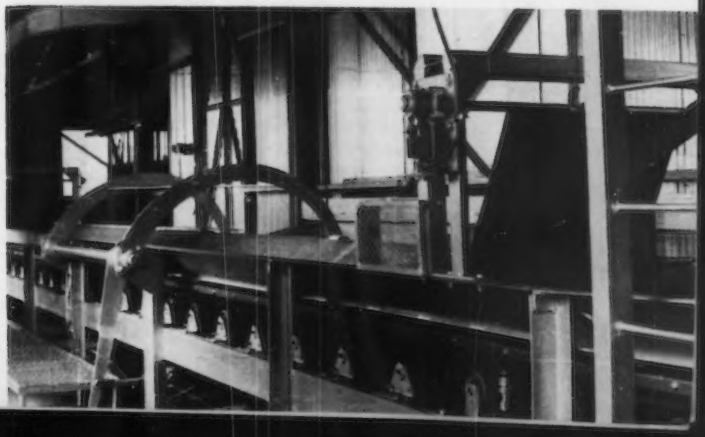
The two Cary-Lifts also transfer pulpwood from the 19-foot tiers to the log dock. Here, one man with a pike pole pulls the logs onto a 40-foot single strand chain conveyor.

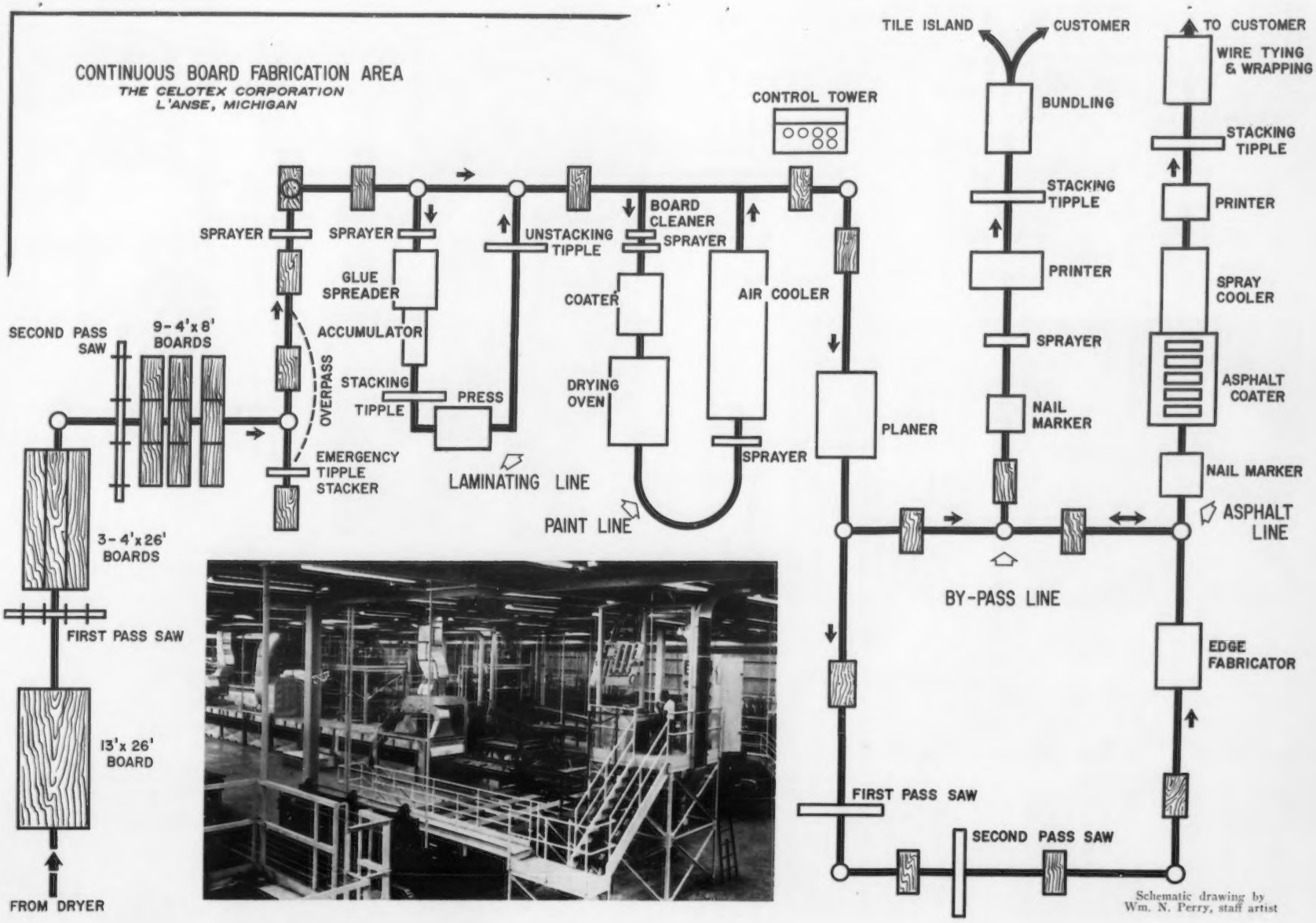
Cary-Lifts are used exclusively in the woodyard to tier the pulpwood and to keep the log deck supplied with wood. ►

▼ Logs drop down 12-foot chute into the 85-inch chipper driven by a 400 h.p. motor.



▼ Where oversize logs are ejected. Paddle which actuates alarm is observed in foreground. Log is rolled off the conveyor at a point between the two arches.





Schematic drawing by Wm. N. Perry, staff artist

Andy O. Wirtanen
Production

Lyman Swanson
Board Mfg. Dept.

Joseph Borowski
Fabricating Dept.

Wilfred J. Howe
Maintenance

Alfred H. Philipp
Technical Services

Robert C. Roberts
Plant Engineer

Henry G. Denny
Material Control

Ray J. Slatery
Quality Control

Supervisory Personnel

Photographs of Celotex personnel, excepting Mr. Alspaugh, courtesy of *L'Anse Sentinel*.

Lynn Sandberg
Forestry Division

Martin Goudreau
Plant Auditor

Logs then drop through a 15-foot chute onto another chain conveyor and thence onto a rubber belt conveyor. This arrangement permits the logs to pass under the railroad tracks. Since the woodyard is situated on a rise of land about even with the roof of the main mill, wood is transferred over and down into the 3-story woodroom by this enclosed 450-foot, 24-inch wide rubber belt conveyor.

Woodroom Operation

The first piece of major equipment encountered as the logs enter the ell-shaped woodroom is the 85-inch Carthage chipper powered by an Allis-Chalmers 400 h.p. motor. Logs up to 14 inches in diameter are reduced to chips as they drop down the 12 foot spout. Logs greater in diameter have previously been ejected from the conveyor by a semi-automatic device. This device consists of a paddle blade hanging over the conveyor, which, as the oversize logs nudges, actuates an alarm. When the log moves opposite the log ejector, the operator actuates an air cylinder which drops a section of side guard on the conveyor. The operator then rolls the log off the side of the conveyor from which it slides down a chute and drops to a collecting point below. If an oversized log is not removed after the first alarm, it will pass under a second paddle which actuates a limit switch and stops the conveyor before the log reaches the chipper chute. The offending log is then removed from the conveyor manually with the aid of an overhead monorail hoist. Oversize logs are at present sold to sawmills. Celotex, however, indicated that a splitter may be installed in the near future to reclaim these logs.

Chip Handling

Following the chipper is a pneumatic conveyor system, carrying under 5 p.s.i. which transfers the chips up through a two-way valve to a 100 cu. ft. capacity surger hopper located near the roof of the woodroom, or diverts them to an outside storage pile.

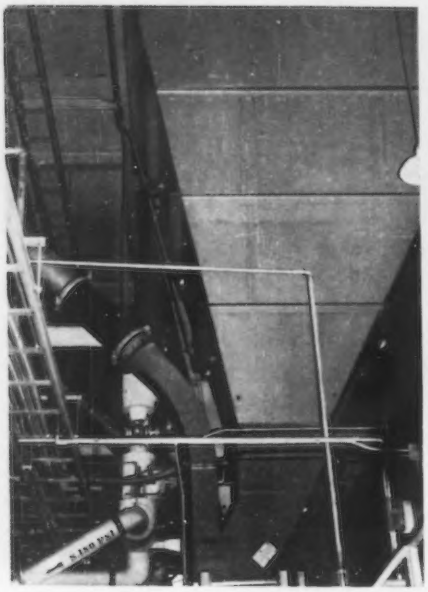
What deteriorative effects outside storage has on chips for Celotex is not yet known. The asphalted area immediately adjacent to the building is used at present only in case of chip overproduction or in emergencies. However, Celotex has established an experimental pile close by. Results thus far indicate outside storage is feasible for short periods of time, but the company emphasizes that conclusive statements would be premature at the moment.

F. D. ALSPAUGH, manager of employee relations, demonstrates the principal mode of travel within the L'Anse plant. A fairly rapid means of moving about is essential in the vast plant which extends for almost a ¼ mile.

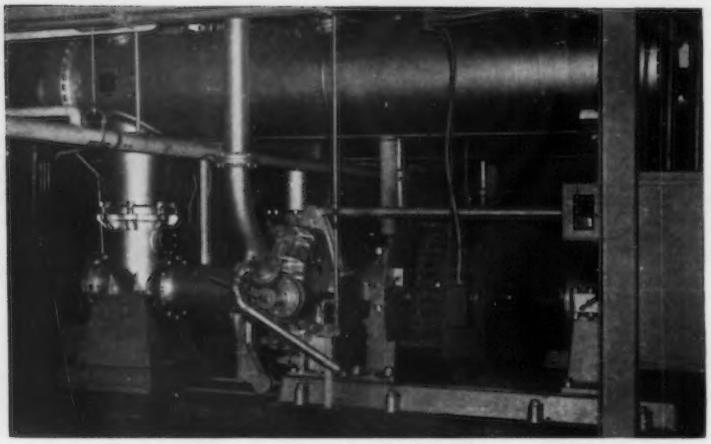
Chips can be reclaimed from outside storage by manually shovelling or bull-dozing chip into a hopper. Two-live screws at the bottom feed the chips back into the Airveyor system at a point close to the chipper. Live screws in the surge hopper feed the chips into a Bauer Barkabrader, a hammermill-type machine which breaks up the oversize chips and raps loose dirt and some bark from the chips. The foreign material is next separated from acceptable chips by a three-deck vibrating Dillon screen. Reject material drops from the screen into a portable waste hopper to be utilized as land fill.

The acceptable chips from the screen, each measuring ¾-inch long by ⅛-inch thick, are pneumatically conveyed to one of two outside concrete storage silos. Each silo, of 100 tons capacity and measuring 24-feet in diameter by 50 feet high, contains ample chips to keep the mill supplied for eight hours.

Woodroom operation is completely automatic and can be entirely remotely-controlled by a chipper operator from a console situated at the end of the log conveyor above the chipper. A system of lights, horn signals and an intercom with loudspeakers breeches the communication gap between the chipper house and wood-



A unique feeding system can keep chips from the silos segragated in these four-cord capacity chip hoppers in the pulp mill.



Steamed chips drop down from the horizontal digester tube into a screw conveyor and are fed into the single disk Defibrator.

yard. The woodyard is manned by a crew of four men, including the Cary-Lift drivers and conveyor loader. The woodroom is designed to produce a 24-hour supply of chips in one 8-hour shift.

Chips are reclaimed from the silos by Link-Belt rotary turntables feeding onto a single belt conveyor which, in turn, carries them to a bucket elevator inside the pulp mill. The bucket elevator then lifts the chips to an overhead conveyor from which the chips are delivered into three 5-cord capacity chip hoppers. Different species of wood may be segregated in each of the silos and, by automatic controls programmed on the pulp mills' graphic panel, chips from one silo may be fed to designated hoppers. The remaining hoppers may be alternately fed from the other silo. Each hopper is equipped with a level probe connected to the automatic controls. The hoppers will then be fed one at a time, but in the sequence signalled by the individual level controls. Feed from the silos will be switched from one to the other in order to supply the type of chip required by the particular hopper signalling for more chips.

Pulping of Chips

The pulp mill employs three Asplund digesters and three Defibrator units in which steam and the fiberizing action of the plates are the only agents used to reduce the hardwood chips to pulp. In this system, small, tapered screws first pick up the chips from the bottom of each hopper and convey them, under increasing compression due to the taper, into their respective digesters. The digesters are horizontal stainless steel tubes, each 36 inches in diameter, 10 feet in length, and containing a screw conveyor. The chips are subjected to 360°F., 175 p.s.i. steam as they are rapidly conveyed through the digester in approximately 30 seconds. Still under pressure they drop down into a small screw which conveys them into their respective Defibrator units located directly beneath the digesters. The Defibrators are standard single-disk models and each is equipped with a 36-inch disk revolving at 720 r.p.m. and driven by a 300 h.p. motor. The resulting pulp is then forced by the steam pressure out of the machine through a six-inch diameter pipe leading to a cyclone exhauster. From here, the pulp drops into a large, three-ton capacity surge hopper. Live screws at the bottom of the surge hopper feed the pulp into an 18-inch diameter horizontal screw conveyor servicing four disk refiners in parallel connection. Individual cross feed screws control the amount of pulp (by their speed) being fed from the main conveyor into each refiner. Surplus pulp in the main conveyor is returned to the top of the surge hopper via an inclined 18-inch diameter inclined screw conveyor. White water from a subsequent decker dilutes the pulp as it falls through the downspouts into the refiners.

Dual Distribution and Refining

The stock distribution system of cyclone surge hoppers and conveyors is a dual one permitting individual Defibrators to feed into either system. It also permits individual refiners to receive stock from either system. In this manner the segregation of wood species which was begun in the chip silos and carried into the hoppers, digesters and Defibrators can be maintained on through the refiners.

Three of the refiners are 36-inch, 900 r.p.m. double disk models manufactured by Bauer Brothers and driven by two 200 h.p. motors. The fourth refiner is a Sprout Waldron 36-inch, 900 r.p.m. single-disk refiner driven by a 500 h.p. motor.

From a 2,300 cu. ft. capacity refiner dump chest, the stock is pumped to a Dorr-Oliver 8-by 16 foot decker. Here, the pulp is thickened to nearly 10 per cent consistency, removed by a horizontal screw, and further thickened to 25-35 per cent solids in two Davenport vertical disk presses. The two-disks in each press, mounted at V-shaped angle to each other, are driven individually through a 10 h.p. gear motor. From these presses the stock drops down into a dilution chest and the effluent, including fines is recycled to the shower on a thickener.

The effluent from the thickener is separated into "cloudy" and "clear" portions. The cloudy effluent, removed from the mat near the entering side of the drum, is used for dilution at the refiner, as previously noted. Clear effluent from the offcoming side of the drum is pumped to a disposal field approximately one-mile north of the plant. At the moment, we cannot report further on this method of disposal, since it is

still in the very experimental stage of development and conclusive statements are not available.

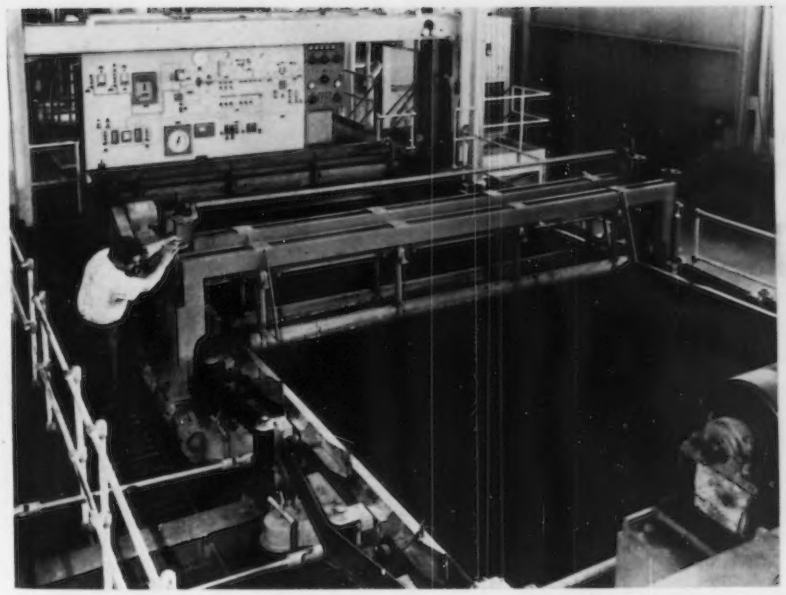
Stock Handling

The stock in the dilution chest is next pumped into a blending chest. In this latter chest, wood pulp, waste paper pulp, and repulped broke stock automatically blended are in variable proportions set up on the pulp mill control panel. The final proportions in which these pulps are mixed together varies considerably with the class of product being made, but wood pulp comprises the largest part of the blend in any case.

Flow rates of each of these stocks as they are pumped from their chests to the blending chest are metered by Fischer & Porter magnetic flow meters and regulated by Honeywell proportioning controls. Consistency of each of these stocks are regulated ahead of their flow meters by Brammer-type regulators. Rosin size is also metered into this chest. From the blending chest, the mixed stock is pumped into one of two 8,000 cu. ft. capacity machine chests which supply the board forming machine. Dual broke chests and machine chests are connected in such a way as to facilitate relatively rapid changes from one of stock to another during operation.

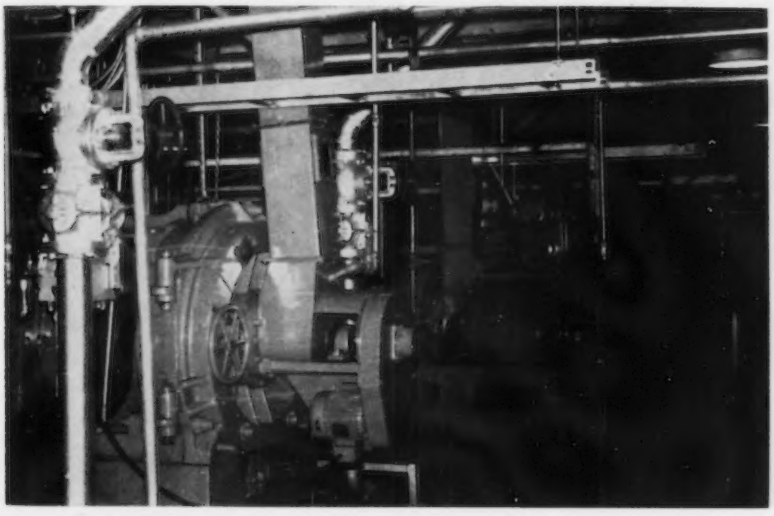
Celotex uses reclaimed newsprint to impart added strength and rigidity to the insulation board. The processing equipment is contained in a 16,000 sq. ft. "paper filler warehouse" separate from, but adjacent to the pulp mill. Repulping of the 1,000 lb. bales is conventional, and is accomplished in a Black-Clawson continuous Hydrapulper. A Brammer regulator brings the consistency to three per cent as the stock is pumped over into the pulp mill where it is refined in a small Claflin refiner powered by a 150 h.p. motor. The stock flows next into a paper filler chest to be eventually metered into the blending chest.

All of the foregoing operations from the manipulation of the chip silo turntables to the flow of stock to the machine chests are controlled by a pulp mill operator and his assistant. The former supervises the operation from a 30-foot long graphic panel located adjacent to the refiners and Defibrators on the first floor. The second man regulates the refiners. All controls are interlocked so that a slowdown or breakdown at any point in the wholly-continuous system effects an appropriate adjustment in the entire flow.



Looking towards headbox end of the board forming machine, showing machine's instrument panel. Operator is making adjustments on puddler.

Cloudy white water from the decker dilutes the stock in the downspouts to the single disk refiner (foreground) and three double disk refiners.

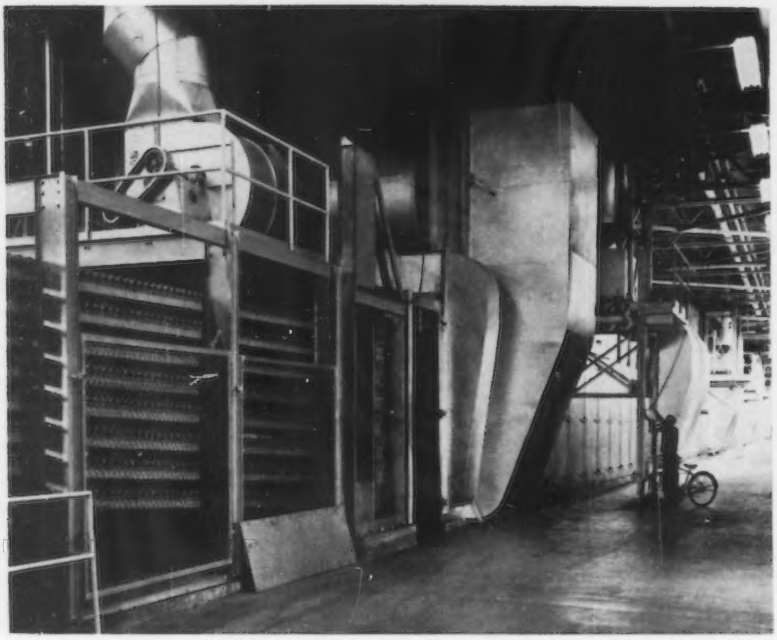


Machine Headbox

Stock is pulled from the machine chests through a Brammer regulator and adjusted to the proper consistency. From there it flows through a magnetic flow meter and automatic regulating valve into the balance tank. Here, the stock is mixed with overflow from the forming machines headbox and additional white water. The quantity of the latter constituent is regulated by the balancing of hydrostatic levels in the white water and balance tanks. In this manner, minor variations in the rates of drainage on the fourdrinier are compensated.

For products requiring an internal water-proofing treatment, a slurry of finely-pulverized asphalt is metered into the balance tank by a ratio controller. Alum is also added to the stock at this point.

A variable speed fan pump pulls the stock from the balance tank, sends it into a header and through a series of spreaders into the lower chamber of the three-chambered headbox. Here the series of streams from the spreaders are blended. The stock then travels vertically through an orifice chamber. The position of a teardrop-shaped throttle, which is



View of the eight-deck, 450 foot Coe dryer as seen from the loading end. It requires from 1½ to 4 hours for the mats to travel through the dryer.

vertically adjustable, determines the velocity of the stock flow through this orifice into the upper headbox chamber. From this chamber, the required amount of stock flows onto the wire at approximately 120°F. temperature. Any surplus flows back over an adjustable dam and into distribution pipes which return overflow to the balance tank.

Fourdrinier Section

The Black-Clawson left-hand fourdrinier, said to be the widest wet board forming machine in the world, carries a 172-inch wide wire and trims a wet width of 165 inches. Design of the machine is conventional; that is, a bottom forming wire runs through the five presses before it returns around to the breast roll and a top wire runs through the presses between the wet mat and the top rolls. Speed of the machine varies up to 50 f.p.m. depending upon the thickness of the board being formed. A travelling rubber belt deckle maintains the forming width and a "puddler," driven by a separate small motor, seeks to improve surface formation via an oscillating action. The puddler consists essentially of two vertical boards rigidly suspended from a common shaft. Both boards are mounted parallel to each other across the width of the wire and project down into the stock on the wire. The driving motor slowly and slightly oscillates the boards in the fourdrinier's longitudinal direction. The depth of projection into the stock is adjustable vertically. The puddler is located about one third of the way down the length of the fourdrinier (not including the press section).

The bottom forming wire, which is 115 feet long (the length of the machine from breast roll to last press is about 55 feet), is supported by 27 five-inch diameter, 169-inch face table rolls. Three Rotabelt units appear next, interspersed by two more table rolls and succeeded by five additional table rolls. The bottom then passes over a stretch roll as it carries the mat into the five 176-inch face suction presses.

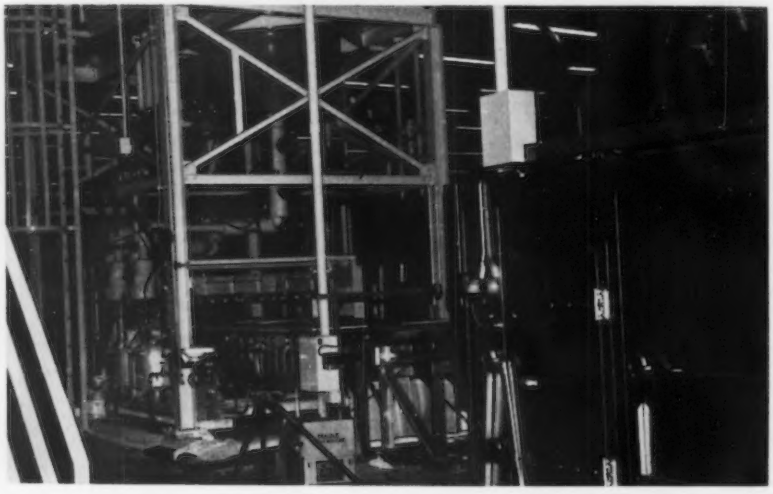
Presses and Drive

Presses one and two each have 24-inch diameter top suction rolls and 24-inch diameter plain bottom rolls. No. 3 press has a 30-inch top suction and plain bottom rolls. Presses four and five both have 30-inch top and bottom suction rolls. Nip pressures on each of the presses are controlled through hydraulic loading.

The bottom wire turns around the fifth press bottom roll and is returned to the 24-inch diameter, 176-inch face breast roll by four 13-inch stretch rolls and one 13-inch guide roll. In between each suction press, the bottom wire is supported by intermediate 5-inch diameter wire press rolls. A 2½-inch Sandusky shower cleans the wire immediately after the last press roll. The breast roll is equipped with a Lodding oscillating doctor.

The 60 foot long top wire turns around the fifth press top roll and is carried back around by two similar stretch rolls and one guide roll to a 24 inch diameter wire turning roll and into the first press. A Broughton oscillating shower cleans the top wire prior to the guide roll. Both wire guides for the top and bottom wires were supplied by Gilbert & Nash. The design of the board machine incorporates double cantilever construction. The fourdrinier frame and bottom press roll framing are cantilevered to allow rapid installation of the bottom forming wire. An additional set of cantilever beams support the top

The coater and portion of the drying oven located on the paint line in the fabricating (board finishing) building.



Right-angled transfer and second pass secondary saws following the planer. Note the sawdust and trim collectors.

Looking past the internal transfer and down the by-pass line. The asphalt coater enclosure is discernible in the background.

press rolls during placement of the top wire.

The wet end of the board machine is driven through separate d.c. motors connected by flexible couplings to both the top and bottom rolls of each of the five presses. The first and second presses are driven by 5 h.p. motors; the third, by a 10 h.p. motor; the fourth by a 15 h.p. motor; and the fifth by a 40 h.p. motor. Speed controls on all five drives are interlocked with the machine's instrument panel which is located above the stock inlet. Operation of the board machine and the blending and flow rate of stock to the headbox are controlled from this panel. It requires a crew of three men per shift to operate the machine.

White water which drains naturally through the wire is collected in a "preferred" white water chest. This material, containing about ½ lb. fiber per 1,000 gal. water, is used for dilution control at the Brammer regulators. Drainage from the Rotabelts and suction presses is reused in the wet broke repulper and the waste paper Hydrapulper.

As the continuous sheet, at about 60 per cent moisture, emerges from the presses onto a chain-driven roller conveyor, caliper is first electronically measured and recorded on the wet end control panel. Then a small felt covered roll smoothes on a base coating of paint on interior finish products.

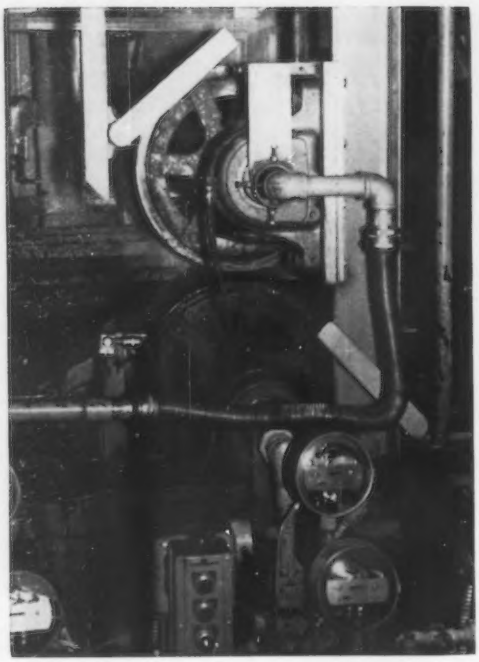
An electric saw traversing the sheet on diagonally-mounted track, square-cuts the sheet into 18 to 26 foot long mats. As soon as the cut is completed, the board is speeded up to introduce a gap between it and the next one, and passes onto a loading tipple. This tipple delivers the board onto one of eight decks of the tunnel dryer. The roller deck which is to receive a board is automatically speeded up to the rate of the tipple, but as soon as the board is fully delivered, this deck slows down to the dryer's normal speed. The tipple then automatically rises to deliver another board to the next deck.

The 450-foot Coe dryer is divided into four heating zones, each equipped with its own steam heating and steam radiation coils and recirculation fans. The board travels through the dryer at approximately one eighth the speed of the board machine. It takes anywhere from 1½ to 4 hours for the mats to emerge. Drying temperatures vary from 300°F. to 400°F. the highest being in the wetter zones. Steam exhaust from the dryer serves to heat fresh water used in earlier states of manufacture.

As the mats emerge from the dryer, 98 per cent dry, overriding clutches triggered by timing devices assure spacing of the boards as they travel down inclined rollers from each of the eight 40-foot cooling decks. These inclines merge to an unloading tipple which transfers the boards to a horizontal conveyor loading to the fabrication warehouse.

Mechanized Board Finishing

The immensity of automated fabrication of the fiberboard into finished products epitomizes the L'Anse plants' inaugural theme of "Electronics in The Logging Country," perhaps more than any other segment of the mill. One man located in a central control tower exercises push-button jurisdiction over virtually all fabricating operations in this area containing 157,500 sq. ft. of floor space (300 x 450 feet) and a maze of well-organized equipment. The entire operation requires 14 attendants during one shift.



Peering through the door of the asphalt coater enclosure, and viewing the initial set of heated strike-in rolls.

Generally, board fabricating plants employ island operations in manufacturing the various laminated, painted or asphalted products. At L'Anse all these segments become part and parcel of one continuous automatic operation, equal to any of "Detroit's" mechanized production lines with the exception of one small separate operation engaged in the fabrication of ceiling tile and wall plank.

Emerging from the dryer room on the horizontal conveyor, the 13 x 18 or 26-foot mats, aligned with the longitudinal axis in the direction of travel, first pass through double arbor primary saws. Here, the edges are trimmed, and the boards are rip-sawed into three four-foot wide strips. An automatic timing switch then trips to raise another conveyor, which now transfers the strips at right angles through second-pass saws. The ends are now trimmed and each strip is cut into two 4 x 9 panels, or three 4 x 8 panels.

A roller conveyor carries the panels into a cyclic transfer, which shunts the panels at right angles onto the main line roller conveyor, automatically adjusting the interval between the panels, now reformed into a single line.

Should an emergency occur somewhere down the line, the cyclic transfer can reverse direction and shunt the panels into an auxiliary tipple, which will stack a one hour's accumulation. These panels can later be recycled into the main line via an overpass, a single panel being automatically dropped into a one-board gap which normally exists after each third board as they emerge from the transfer.

The panels then pass through another right angle transfer and on to the main conveyor from which they can be switched off to go through either the laminating line or the paint line or both in series. After returning to the main line, the boards travel through other right angle transfers and through a planer and can then be routed through any one of a number of combinations of operations. They can go through the first and second passes of the secondary saws in which they are trimmed to smaller sizes and from there to an edge fabricator or they can by-pass this section through the internal transfer, and from this point they can go through either the asphalt coating line which includes nail marking, coating, cooling, printing, and stacking or through the by-pass line which includes nail marking, printing, and stacking. As shown on the unscaled schematic diagram of the board finishing area, the section of the internal transfer which is between the asphalt line and the by-pass line is reversible.

Synchronized Drives

The speed of all conveyors and the cycling operation of transfers are all integrated through an electric Selsyn drive system. Individual boards are held in exact synchronism by means of gates located ahead of transfer points which are operated from cams driven from the same Selsyn system. The complete route to be traveled by the continuous stream of boards is programmed on the central graphic console from which the speed of the entire system is regulated.

Basically, the laminating line consists of the following equipment, in order of appearance: water spray, to bring up the moisture content 1-2 per cent; glue spreader, which applies a quick-setting adhesive to the top of the bottom panels of the sandwich, to both sides of the intermediate panels, and to the bottom side of the top panel; accumulator where the sandwich is formed; stacking tipple which builds a 50-inch pile of sandwiches; hydraulic press, where the entire stack is compressed for 7 minutes; and unloading tipple for transfer back into the main conveyor.

Acrylic Coater

The coating line, next adjunct to the main conveyor, is comprised of the following basic equipment, in order of appearance: board cleaner; water spray; coater, where a curtain of acrylic-type paint is released under pressure through a slit-like aperture onto the dust-free top surface of the panel; propane gas-fired 60-foot oven where the panels are dried at 500°F. in 30 seconds (panels travelling at 120 f.p.m.); powered horseshoe conveyor; water sprayer; and 80-foot long air cooler. These water sprayers mentioned in the foregoing are used to equalize surface moisture and prevent warping of the board.

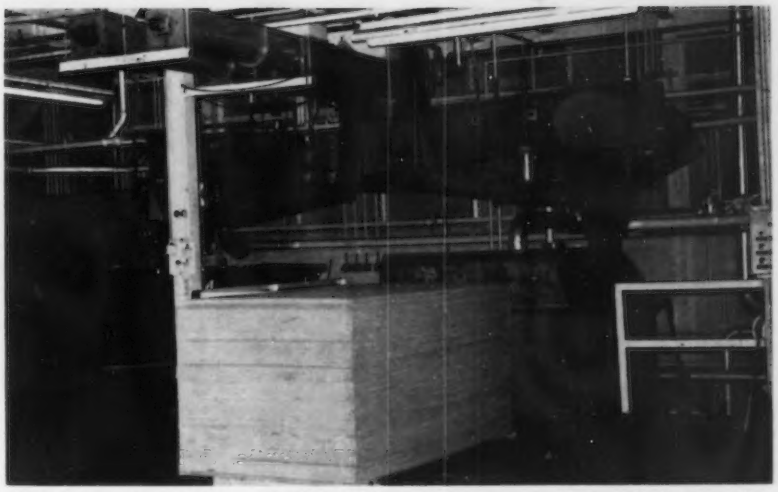
The main conveyor then carries all boards through a bottom-head planer. They can then go through the secondary saws and edge fabricator and on to the asphalt line or by-pass line, or they can omit the saws and edger and go directly over the internal transfer to the asphalt or by-pass line. The by-pass line includes a nail marker; water sprayer; printing roll; and a stacking tipple.

The asphalt line includes a five-roll coater contained in its own enclosure. Hot asphalt is applied to both surfaces and all edges by the first set of rolls. A second set of wiper rolls smooths out the asphalt coating. The asphalt is next "struck-in" the panel by three sets of 450-500°F. heated rolls. Heat is supplied by propane gas burners inside the rolls. The panels are conveyed out of the enclosure into a 40-foot long water and air spray cooler, then through a printing roll which applies

the Celotex trademark, and stacking tipple. The bundles are either wrapped or strapped, then warehoused in the immediate area by fork-lift trucks. Wire tying is accomplished with semi-automatic equipment.

Painted panels destined for fabrication into ceiling tile are picked up from the by-pass line's tipple and fork lifted to the separate tile operation. This line is similarly continuous and automatic within itself, but it is not under the control of the central tower. The following flow of equipment prevails: unloading tipple; bottom head sander (the painted surface is top-side); first and second pass saws; multiple drill with by-pass around it; first and second edge fabricators; 3-color pattern roll printer and dryer with by-pass around it; inspection belt; wall plank take-off, or tile accumulator (stacker); carton filling; carton sealing; and palletizing elevator. This packaging operation is automatic except for manual insertion of the stacks of tile into the cartons. The tile line operation requires a crew of four men per shift.

An extensive vacuum system of ducts collects dust and trimmings from all parts of the fabrication area: saws, board cleaner, edge fabricators, sander, planer, and drill. This material is ultimately carried into three Roto-Clone collectors where it is sprayed with water. Screw conveyors then pass the material into two Sprout-Waldron flat bed drainers and then into a Jones Hi-Lo pulper. Reject boards are piled nearby and hand-loaded into the pulper by the operator. The repulped broke is now pumped to the pulp mill where it is thickened from two to four per cent consistency in a Sprout-Waldron thickener, passed through a small Bauer single-disk refiner and stored in one of two broke stock chests.



Wetted-down board dust and trimmings are screw-conveyed through drainers into the Hi-Lo pulper. Reject boards piled on floor are thrown into pulper by hand.

Auxiliaries

It is estimated that the L'Anse mill consumes about 100,000 kwh. per day, and about 2¼ million pounds of steam per day. Both of these commodities are purchased from the nearby Upper Peninsula Power Co. station. The Celotex plant has its own small capacity steam boiler plant for use in emergencies in order to heat the plant buildings and the outdoor asphalt storage tank.

Granular asphalt is stored in three A. O. Smith Permaglas 60-ton capacity silos located outside the pulp mill. Sweeping arm feeders inside the silos feed the asphalt onto a belt conveyor. A bucket elevator next carries the asphalt up and dumps it into a hopper just inside the pulp mill building, where it is Gravimetrically fed into a hammermill pulverizer. The resulting material is slurried to be mixed with the stock in the balance tank immediately prior to the board machine.

An additional feature of the L'Anse plant is the daily consumption of less than 1,000,000 gallons of fresh water, said to be far below that normally required in fiberboard production. Fresh water is obtained from Keewenaw Bay and is used primarily for white water makeup.

SUPPLIERS OF MAJOR EQUIPMENT

Cary-Lifts	Pettibone Michigan Corp.	Stock Pumps	Black-Clawson Co.
Wood & Chip Belt Conveyors	Link-Belt Co.	Water Pumps	Allis-Chalmers
Chipper	Carthage Machine Co.	Davenport Presses	American Defibrator Co.
Air Conveyors & Valves	Sprout Waldron Co. and Fuller Co.	Consistency Regulators	Black-Clawson Co. and Fischer & Porter
Bark Abrader	Bauer Bros. Co.	Metering Pumps	Robbins & Meyers
Chip Screen	Carthage Machine Co.	Stock Valves	DeZurick
Surge Hopper	Link-Belt Co.	Chest Agitation	Black Clawson Co.
Silo Turntables	Link-Belt Co.	Board Machine	Black Clawson Co.
Controls & Switchgear	Westinghouse	Traveling Saw	Coe Manufacturing Co.
Motors	Allis-Chalmers	Vacuum Pumps	Nash Engineering
Bucket Elevator	Link-Belt Co	Tunnel Dryer	Coe Manufacturing Co.
Digesters & Defibrators	American Defibrator Co.	Variable Speed Drive For Bd. Mach. Dryer	General Electric Co.
Refiners	Sprout-Waldron, Bauer, and Bolton-Emerson	Wire Showers	A. E. Broughton & Sandusky Foundry & Machine Co.
Screw Conveyors	Link-Belt Co.	Oscillating Doctor	Lodding Engineering Corp.
Decker	Dorr-Oliver	Wire Guides	Appleton Machine Co.
Hydrapulper	Black-Clawson Co.	Selsyn Drive System	Westinghouse
Instrumentation	Minneapolis-Honeywell Co.	Broke Pulper	E. D. Jones

The Museum buildings—an ideal setting in this historic city.

The old paper mill cellar; rag cutting table at left, vat and mold at right. (In lower part of vat, brazier is built in for heating the pulp.)

Swiss Paper Museum Opens New Department

One of the world's most famous museums devoted to the history of papermaking, the Schweizerische Papiermuseum, in Basel, Switzerland, is in the process of opening a department for demonstrating old papermaking practices to the public. PAPER TRADE JOURNAL visited this famous museum recently and was shown round by its curator, Dr. W. Fr. Tschudin.

One of the interesting aspects of this new museum project is that Swiss paper industry firms are cooperating in this new venture. Notable among these efforts are those of the Sandoz Chemische Fabrik, A. G. Basel, well-known Swiss manufacturers of dye stuffs for the paper industry. The pulp for the museum's miniature paper mill will be made available by Papierfabrik Scham, in nearby Canton Zug.

The museum curator, Dr. Tschudin, is a well-known historian, whose many activities in paper history and published works are known far beyond Switzerland's borders. A paper chemist by training, Dr. Tschudin is also associated with Sandoz. He has been curator of the Basel museum for the past seven years.

The collection of the Schweizerische Papiermuseum is housed in the Swiss Museum of Folk-Lore, which occupies a number of picturesque mediaeval buildings in the center of this historic city. The museum itself, and the priceless paper history collection it contains, is a remarkably popular institution in Switzerland. Last year, 55,000 visitors toured the museum and 20,000 viewed its collection devoted to the old paper making craft.

New Old-Time Mill

The new hand-made paper demonstration room is to be an accurate reproduction of an old-time mill, completely outfitted with an old Hollander beater, vats, screens, presses and all the other tools required for hand-made papermaking. The museum has spared no effort to make this facility as representative of mediaeval papermaking practices as possible. The pulp supplied by Papierfabrik Scham (which itself calculates its origin some 300 years back) is exclusively linen. Animal glue size, prepared as closely as possible to mediaeval methods, is used and the paper, of course, is dried by loft-hanging.

The Swiss Paper Museum was first organized in spring of 1955 to augment an outstanding collection devoted to the history of printing in the Swiss Printing Museum in Bern. One of the principal reasons for establishing the paper museum in Basel was to give young Swiss papermakers and printers the opportunity to see personally demonstrations of the art of making paper by hand. The entire paper mill collection was originally started by Sandoz.

This fine collection is now spread over a number of rooms in the Basel Museum. One of the highlights is a cellar room in which a mediaeval paper mill is reproduced in full scale.

Other Interesting Features

Another room contains the paper museum's archives of historic pictures and drawings, old paper samples, and a collection of films devoted to paper history which are also the property of the museum. This room also doubles as a projector room for showing the 15 films already available.

The cellar display room, amazingly reminiscent of an old paper mill's "stamping cellar," contains an ancient rag cutting table, parts of an old rag stamping works, the usual vat with molds and couch stool, an original sheet press and drying facilities. All this equipment is full-

sized, assembled with care and an untiring effort to create an old papermaking facility in its original form.

The "Halbvsenstube" on the first floor, contains a precise model of a complete rag-stamping works, that famous piece of equipment used by mediaeval papermakers to reduce rags to the fibrous state. In this equipment, a series of stamping hammers continuously stamped rags for hours to reduce them to fibers. (This equipment was, of course, water-powered.)

Of particular interest also is the pulp dipping vat in the museum cellar, which contains a built-in brazier by means of which the pulp suspension could be heated. It is an exact replica of the last such equipment used in the old Swiss hand-paper mill known as Auvergne.

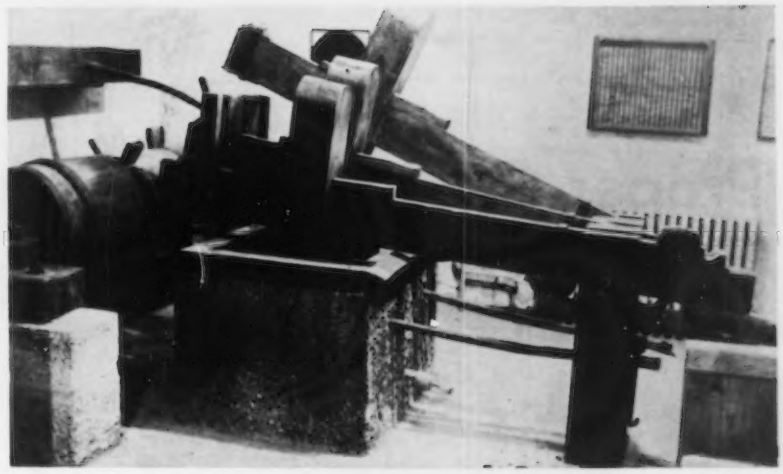
The first floor portion of the museum is surrounded by a beautiful mediaeval courtyard. Here is housed an interesting array of old papermaking objects, including molds from China, Indo-China, Thailand and from various parts of Europe. There is also a collection of old Swiss watermarks and the oldest known sample of paper made in Basel dating back to the first half of the 15th century.

Unique Film Library

The museum's paper history film library is considered outstanding. The following subjects are included: the manufacture of papyrus; mediaeval papermaking practices; making paper by hand in the Far East (Japan); the development of papermaking in the East and its transition into Europe; and old calendering methods for handmade paper.

The newly created hand-made paper demonstration facility will at first operate twice a week. The museum will invite school groups and the general public to witness the demonstrations. The museum is also happy to arrange for private demonstrations for papermaking visitors from abroad. Two employees of Sandoz man this "museum paper mill." They are skilled papermakers who do a remarkable job of explaining the historic process.

The best conclusion we could offer to this brief description of the Schweizerische Papiermuseum in Basel, is to offer it as a travel tip for papermakers everywhere. Do, by all means, include this interesting paper museum on your itinerary if you visit Switzerland. You will be royally welcomed by its staff and you will find that touring it will be an experience long to be remembered.



Old stamping works in cellar display.

Old drying presses, also in the cellar display.

Partial view of cellar display shows how museum creates atmosphere of old time paper mill working conditions.

MAINTENANCE SERIES
NUMBER 30

Proper Calender Roll Maintenance Is Essential to Paper Quality

Importance of correct roll crowns and care of doctors is stressed. Roll grinding tips are given as well as rules for handling and storage of rolls.

Franklin B. Joy,
Sales Engineer,
Farrel-Birmingham Co.,
Ansonia, Conn.

In the manufacture of paper, calendering is a critical process. It is the operation that must impart the practically perfect uniformity required in high-quality production. Particularly in the making of light-gauge papers, unvarying thickness across the entire sheet is essential.

Because the calender carries this heavy responsibility for the quality of the finished product, it should be operated with care and good attention given to its maintenance. When the rolls of a stack have been ground to proper shape and satisfactorily aligned, the calender should not be subject to unnecessary manipulation. This, however, is not always the case because calender men frequently resort to practices of heating or cooling bearings, or jacking and padding in an effort to make a better reel. Certainly all possible sources of trouble ahead of the calender should be investigated because such expedients can abuse this highly precise machine and should be avoided. Moreover, they are nonstandard arrangements which provide no guarantee of satisfaction under slightly altered circumstances, or with a change of operating personnel.

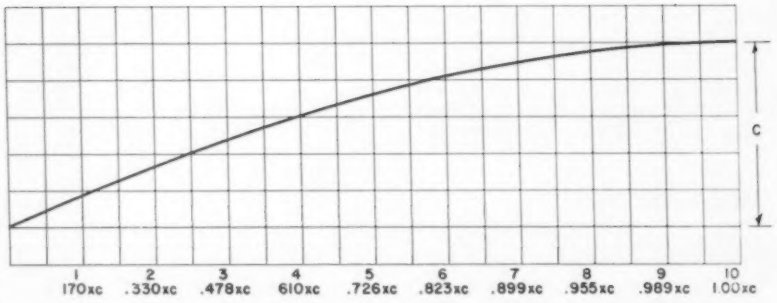


FIGURE 1. STANDARD CROWN CURVE to produce uniform nip pressure.

Roll Doctors

Proper calender maintenance importantly includes the preservation of fine roll finish. This directs attention to doctors which, although improved in their designs, still, under certain conditions, mark the rolls. The weight of the doctor assembly, as it affects the pressure of the blade against the roll, is very important, and this pressure should be as light as possible. The angle of the blade against the roll is also important for satisfactory performance and to make it, as far as possible, self-cleaning. There are various types of

FIGURE 2: CHECKING THE SHAPE of a calender roll in a roll grinder with an indicating caliper.

blades available, but, regardless of choice, the blade must be shaped correctly to the roll and ground frequently enough to maintain the shape. Doctors should be kept clean to avoid foreign material lodging between the blade and the roll which could cause scoring. The use of oscillating doctors helps to prevent scoring of the rolls; also, avoiding excessive pressure on doctors lessens this hazard.

Importance of Proper Crowns

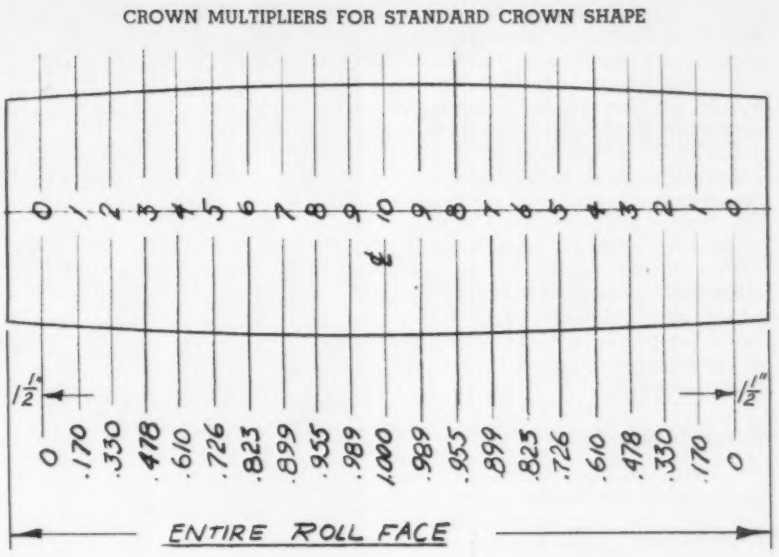
If a hard center or hard edges develop on the reel, or if hard and soft spots occur across the reel, attention should be given to correcting amount of crown or shape of crown and also to checking conditions which might affect uniformity of temperature.

When the product being made is always the same and the operating conditions remain essentially the same, a single set of crowns, properly calculated and checked, should produce satisfactory operating conditions. For the mill running a variety of papers, that is with respect to caliper and finish necessitating operating a calender with varying nips, the crown applied to a set of rolls is, of necessity, a compromise and, therefore, will not be truly correct for all conditions.

Fully as important as proper amount of crown and its proper distribution in the calender is correct crown shape. This also holds for any other rolls of the paper-machine, press rolls and draw rolls for example. All rolls should be ground within accuracies suitable for the particular type of product being processed. To illustrate, it is certainly most important to have a very accurately ground set of rolls when producing sheets in a thickness range from .002 inches to .003 inches compared to the production of a sheet of board which may be .020 inches or more in thickness. In any event, it is desirable to keep the roll shape as accurate as possible, that is, with a minimum deviation from target curve.

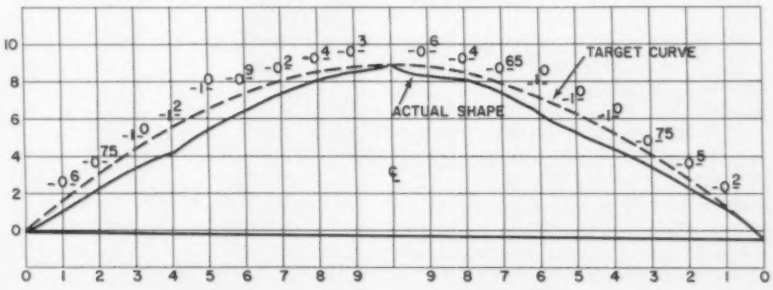
The correct crown shape for most paper mill applications of chilled iron rolls is a 70 degree curve, illustrated in Figure 1.

When a roll is measured for proper shape, a roll caliper such as is illustrated in Figure 2 should be used. The roll should be divided and marked off into twenty divisions starting 1½ inches from the end of the face on each end and caliper readings taken at each of the twenty positions. These readings should then be graphed and plotted against a standard target curve based on the actual measured crown. As pointed

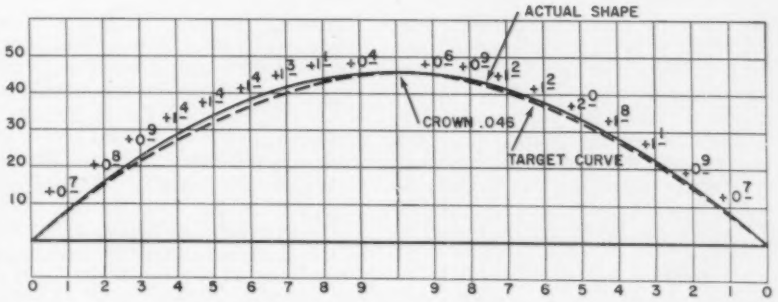


1. Caliper readings should be taken starting on either end at point "0" with dial indicator set on zero, and readings made at 10 equally spaced points, to point number 10 (center line), and then repeat this procedure commencing at opposite end.

2. Proper reading for each point is equal to the multiplier times the crown being applied, i.e.: If crown = .015 inches; the reading at point 5 for each end must be .015 × .726 = .0108 inches.



Poor Roll Shape. Deviations from target in thousandths and ten thousandths of an inch.



Good Roll Shape. Deviations are shown from the target in thousandths and ten thousandths of an inch.

FIGURE 3. HOW TO MEASURE AND CHECK ROLL FOR PROPER SHAPE.

out above, the deviation from target should be held to a minimum. This technique is outlined in Figure 3.

The machine used for roll grinding should be periodically checked for proper alignment and leveling. When a roll is set in the grinder, a check should be made to make sure that the bearing areas are running concentric. It is important that the grinder be isolated from external vibration with a suitable foundation to insure accurately ground rolls. The two-wheel roll grinder illustrated in Figure 4 has proved to be the best type of machine for grinding rolls in the paper industry.

Roll Grinding Tips

As with the calender, roll grinders also require intelligent and careful operation and proper maintenance. The following suggestions come from men of long experience in the operation of various roll grinding machines used in paper mills:

1. If results are not satisfactory, don't be hasty about blaming the grinder. Check first on conditions that may need correction:

a. Are the roll necks round and in good shape?

b. Are the roll neck rests in good condition and is the work properly set?

c. Is the wheel in good condition?

d. Is there any unusual activity in the vicinity causing vibration of your machine?

2. Don't try to hurry roll grinding. If too much stock is hogged off at first, it is probable that more time will be lost than saved in trying to get a satisfactory surface when finish grading. It is wise whenever possible to schedule fine work so that the job can be completed within one work period. Conditions overnight can vary slightly; even strong sunlight on a roll can cause sufficient metal expansion to affect a fine adjustment.

3. Unless a wheel is ideally suited to the work, occasional dressing may be required to obtain the best results.

4. It is good practice to cover the roll journals when grinding the roll body to keep the compound from contaminating the journal lubricant and to keep grit out of the gib area.

5. Make sure that the grinder in use is properly lubricated. A check-up by chart should be made at regular intervals.

Roll Handling and Storage

It is well to remember that proper roll maintenance starts the moment a roll arrives at the mill. If it is opened for inspection, the roll should be recoated to prevent corrosion and

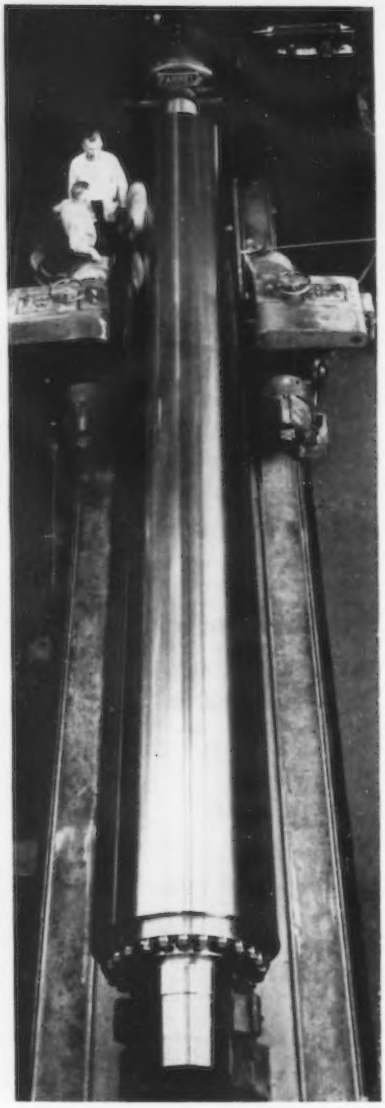


FIGURE 4. GIANT CALENDER KING ROLL being ground in a two-wheel roll grinder.

wrapped in paper which is coated on the inside with rust-resistant compound. How substantial the wrapping should be depends on how soon the roll will be used. For longer storage there should be several layers of wrapping paper and the rolls should be periodically inspected. Also, when storing rolls for long periods, they should be rotated at regular intervals to minimize permanent set. Storage for any period of time should be in a dry and heated area.

When lifting and transporting a roll a protective canvas wrap should be used. Rolls with small diameter steel journals should be lifted with a sling around the body, not supported by the journals. Other types of rolls may be lifted from the journals, using well-protected wire rope. Do not use chains.

Problems and Causes

Following is a list of problems which may be encountered in connection with the use of chilled iron rolls or calenders and the probable causes based on very considerable trouble-shooting experience:

Burned spots, spalling

Pads—running metal-to-metal—violent bouncing of the stack—high ends—bearing heat—misalignment—stalling.

Denting

Foreign material in furnish or possibility of roll diameter being reduced to a point where proper hardness no longer exists—improper roll selection—wads and plugs.

Pitting

Chemical action (which might be improved by the use of higher alloy rolls, the addition of an inhibitor to the solution or grounding the water box)—poor grinding and finish—improper roll selection—pitted water doctor rolls.

Excessive wear

Improper crowns or excessive pressure on doctor blades—misalignment—bearing wear—running metal-to-metal.

Scoring

Poorly ground doctor blades—excessive doctor pressure—dirty doctors.

Excessive variation in bulk or caliper lengthwise of the sheet

Eccentric rolls.

Excessive variation across the sheet in bulk or caliper

Improperly crowned rolls—non-uniform temperature conditions.

Finish not up to quality

Insufficient number of roll nips—poorly ground rolls (on the assumption that there is no trouble at the wet end).

Broken roll journals

Excessive loading—jacking—lifting several rolls with one intermediate roll.

Barring

Poorly ground rolls—improper bearing assembly—burns—excessive speed (operating the rolls too close to a critical speed)—rolls not ground concentrically—rolls not properly aligned.

How to Use the Stowe-Woodward Nip and Crown Test Method

Details are given on test procedures and interpretations of results when testing paper machine rubber covered press rolls.

Warren Stubblebine,
Director, Research and Development
Stowe-Woodward, Inc.

A new simplified method for testing both the nips and crowns of rubber covered rolls as developed by Stowe-Woodward, Inc., was described in our August 29, 1960, issue. The nip width tester consists of rolls of specially-designed and embossed aluminum foil, with an exact thickness maintained throughout each roll of foil. This present article provides further information on the use of the test and interpretation of the results.

Material Used for Tests

Aluminum foil of the soft variety, uniform in thickness, is used as the basic material for the tests. This is embossed with a pattern which, when subjected to pressure, is pressed flat in the nip, so that in effect a picture is taken of the nip contact area. The pattern has been selected to give a clearly defined impression of the nip, permitting measurement to one hundredth of an inch. The embossed foil is available in rolls six inches wide and 150 feet long.

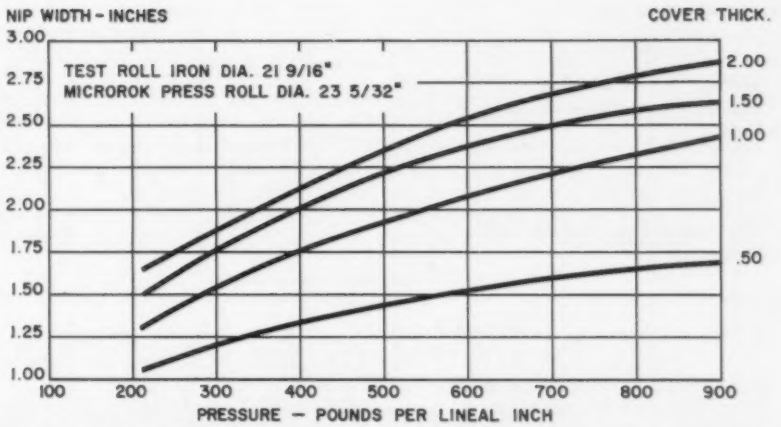


FIGURE 1. COMPARISON OF NIP WIDTH versus pressure is shown here at various thicknesses for a 26 ⅛ P. rubber cover.

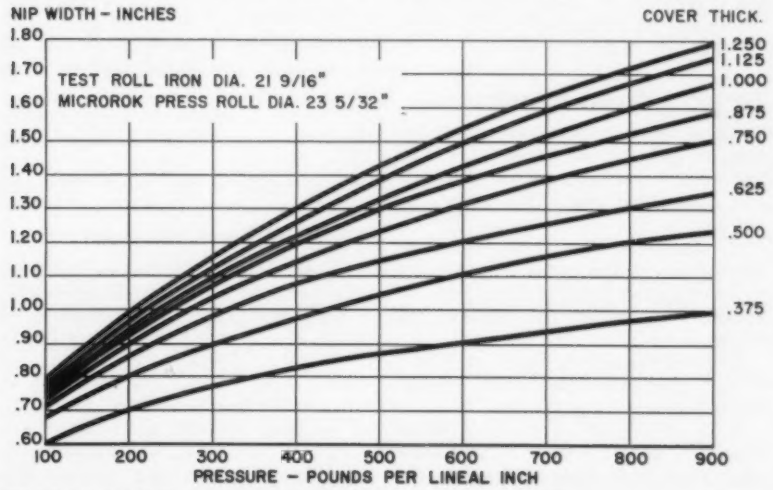


FIGURE 2 CURVES REPRESENT COMPARISON OF nip width, pressure and cover thickness for a 50 ⅛ P. rubber cover.

Procedure for Test

A test on a press is made in the following manner.

1. A strip of foil is placed across the roll face, and secured by a few tabs of pressure sensitive tape.
2. Best results are obtained with the bright side of the foil contacting the harder roll.
3. The foil is then marked at each end to identify the edges of the roll and other information such as: front and back, date, pressure, etc. This is done by writing directly on the foil with a ball point pen.
4. The roll is then rotated into position so that the contact of the nip will occur as nearly as possible in the center of the strip.
5. Reduced pressure is than applied sufficient to engage the rolls, taking care that both ends are brought into contact evenly. The pressure is then built up evenly to the desired amount for the test and then released.
6. The roll is again rotated so the

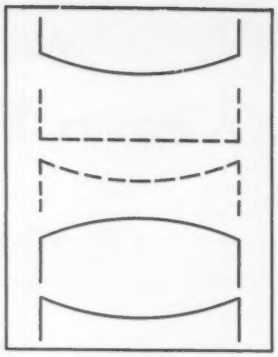

Top roll properly crowned.
Assumes good straight line contact under load.
Bottom roll undercrowned—assumes a concave shape under load.
The nip impression then will graph out a concave pattern.

FIGURE 3

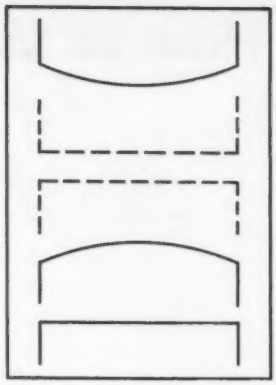

Top roll properly crowned—assumes good straight line contact under load.
Bottom roll properly crowned—assumes good straight line contact under load.
Nip pattern is good straight line impression.

FIGURE 4

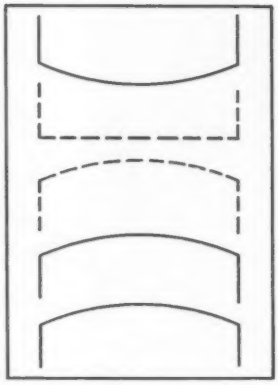

Top roll properly crowned.
Assumes good straight line contact under load.
Bottom roll overcrowned—assumes convex shape under load.
Nip pattern is convex in shape.

FIGURE 5

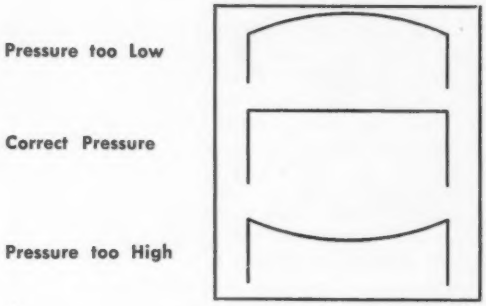


FIGURE 6

foil strip may be removed.

7. The operation requires abut five to ten minutes of machine time, depending on press design.

Measuring the Test

An accurate impression of the nip contact area. At this stage it is impossible to examine visually the fine details of the impression; however, any obvious large deviations in nip width would be apparent. An example would be an end to end variation which could mean uneven side to side loading variation. This might be the case if something were wrong with the loading mechanism or pressure gauges. The situation could then be corrected before the start-up.

To get the real value from this test, it is necessary to measure the nip width very accurately at intervals of one or two inches along the pattern. On shorter face rolls or lighter duty rolls, intervals established by dividing the nip contact into 20 equal divisions is all that is necessary. This would compare with the divisions used to measure crown on the face.

Measuring of the nip impression on the foil is done by using a pair of fine point dividers and setting the points at the very edges of the pattern. The width between the divider points is then checked using a six-inch scale graduated in hundredths of an inch.

The information is then plotted on graph paper and is now ready for analysis. In order to make an intelligent analysis, it is necessary to understand the basic factors which influence nip width.

Factors Influencing Analysis

Several factors influence nip width, but all but two of these basic factors may be considered as constants for any given test. This group includes:

1. The effect of load deflection properties of the cover as indicated by plastometer hardness readings. Of course, the softer the rubber, the wider the nip.

2. Roll diameters have an effect. Under the same conditions, larger diameters yield wider nips.

3. A drilled cover yields a wider nip than the same cover before drilling. The amount of difference depends on the percentage of void area in the pattern.

4. Temperature is likewise a factor since rubber is generally softer at higher temperature, which would give a wider nip.

This leaves the important factors of cover thickness and applied pressure for consideration. These factors are represented graphically by Figures 1 and 2.

Figure 1 represents a test conducted on a 26⅛P rubber cover. This compares nip width with pounds per lineal inch pressure at various cover thicknesses.

Figure 2 represents a test conducted on a 50⅛P rubber cover with the same comparison of nip width, pressure, and cover thickness.

Effects of Cover Thickness

It is obvious that cover thickness plays an important part in nip width.

This brings up the question as to what is important in making paper. Is it the nip width, the pounds per lineal inch, or the unit pressure in pounds per square inch? It is obvious if we start out with a one inch thick cover at 300 P.L.I. and then try to maintain this nip width as the cover thickness is reduced, then it would be necessary to increase pressure

beyond reason. Likewise, if the P.L.I. pressure is maintained constant, then the unit pressure in pounds per square inch is increased substantially as the cover thickness is reduced.

There is a slight effect from the crown. With straight cores this results in a difference in cover thickness between the center and the ends of the covering. At full cover thicknesses this effect is minimized, but it is magnified as cover thickness is reduced. The result of this effect would be a slightly wider nip at the center even though the pressure is distributed evenly. Crowning of some suction shells, which has been done recently, results in more uniform cover thickness and in effect eliminates this variation in nip width.

Effects of Pressure

By the slope of the curves in Figures 1 and 2, it is obvious that a small change in nip width agrees with a rather large change in pressure. If we are to get a reliable pressure reading from the nip pattern, it is necessary to get a very accurate reading on the nip width. This is the main advantage of using foil, since an accuracy of .01 is possible.

As it happens, each of the curves follow a definite mathematical relationship. The expression is NW = KP.38 and makes it possible to translate nip widths to actual pressure using this formula. Sometimes it is surprising to find that local areas of the rubber cover are subjected to extremely high pressures even though the average loading may be reasonably low.

Effects of Crowns

Another advantage of foil nip impressions is the correlation of crowns and crown refinement, including end relief, in the analysis of the nip patterns. The very basic principles involved are shown in Figures 3, 4, 5 and 6.

Figure 3 represents a condition where the roll is under-crowned. The broken lines represent the shape of the rolls under load deflection. The applied pressure would be greater at the edges and result in a nip pattern having a concave shape.

Figure 4 represents a condition where the rolls are properly crowned. The pressure distribution would be even and this would produce a straight pattern of nip width.

Figure 5 shows a case of overcrowning. The greater pressure in the center produces a wider nip and therefore a convex nip pattern.

The cases represented here illustrate the basic principles, and show only one roll affecting the nip impression. Actually, the effects can be the result of both rolls influencing the nip pattern; therefore crown refinement in a press must consider both rolls independently and also jointly in a recommendation.

Figure 6 shows the effects of changing the pressure while the crown remains the same. Low pressure results in a convex nip pattern, and high pressure in a concave pattern.

This last condition represents the most dangerous one for rubber covers. As pressure continues to be raised, the average increase is actually borne by the ends, and therefore goes up as a multiple of the average. In some cases, the pressure in the center is actually reduced when the average is raised.

The conditions as illustrated in Figure 6 should be well remembered, for it is this information, combined with the nip impression, which will allow an improvement in the nip contact of the rolls. When a roll is installed in a machine, it is too late to do anything about the crown, but it is possible to find the pressure loading level which best suits that crown.

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‡ Depending on Brightness.

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4	6.75/6.00	6.50/6.25	6.50/6.25	6.50/ —
5	6.00/5.50	6.00/5.75	6.00/5.50	6.00/5.75
6	5.50/4.50	5.25/5.00	5.25/5.00	5.00/4.00
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No. 1 Mixed Paper	$ 7.00/ 9.00	4.00/ 7.00	6.00/ —	12.00/ —
No. 1 News	12.00/ 13.00	11.00/ —	13.00/ —	12.00/ —
Overissue News (Lg. size)	11.00/ 13.00	9.00/ 11.00	18.00/ —	18.00/ —
Mill Wrappers	19.00/ 22.00	9.00/ 11.00	9.00/ —	13.00/ —
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(Semi-chem. medium)	45.00/ —	45.00/ —	42.50/ —	— / —
New 100% Kraft Corr. Cuts	40.00/ 42.50	— / —	57.50/ —	— / —
New Br. Kraft, Env. Cuts	70.00/ 75.00	70.00/ 75.00	52.50/ —	60.00/ —
New Br. Kr. Bag Waste Prntd.	55.00/ 60.00	55.00/ 65.00	52.50/ —	50.00/ —
New Br. Kr. Bag Waste Unprintd.	60.00/ 65.00	65.00/ 70.00	60.00/ —	55.00/ —
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Hd. White Shvs.	85.00/ 90.00	90.00/100.00	85.00/ —	95.00/ —
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Manila Tab. Cards	62.50/ 65.00	62.50/ 65.00	60.00/ —	65.00/ —
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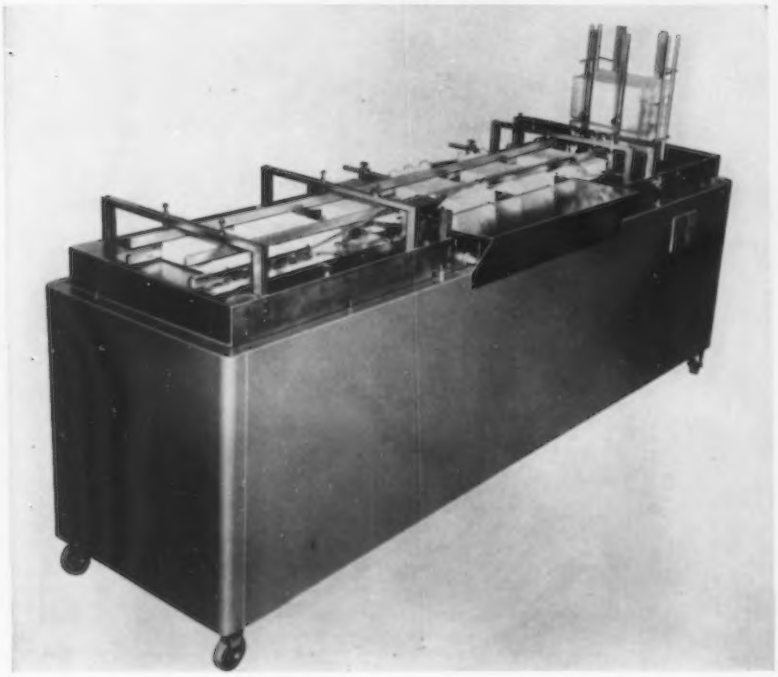

Carton Former and Closer Available Under Lease Terms

King-Tuk, a high speed machine for erecting and closing several styles of end-opening cartons in a horizontal position, is now available, under lease terms, from the Boxboard and Folding Carton Division of Continental Can Co. The King-Tuk equipment is claimed to handle a wide range of carton sizes with greater versatility as to carton size and style than any similar machine in its field.

The King-Tuk line forms cartons ranging in standard size from ½ x ½ x 3 inches to 12 x 4 x 12 inches. Operating on a mechanical principle, the machine is easily adjusted by the operator. There are no mechanical timing or maintenance problems requiring a skilled mechanic. Parts for size changes can be installed in a matter of minutes by the operator without tools.

A chain drive incorporates all moving parts for feeding, forming and closing the cartons. The machine operates on 110 volts, 60-cycle, single-phase electric current.

A hydraulic "vari-drive" provides the driving power and allows the operator to completely control speed (up to 90 cartons per minute). The driving arrangement eliminates braking "drift" commonly experienced with direct electrical drives or sliding pulleys and provides full safety against machine damage and personal hazard.

The King-Tuk machine is made in various models which will erect the cartons and close one end only or pass it through a manual filling station and then close both ends of the filled carton by locking, gluing or both locking and gluing. Length of machines varies from five feet for the basic model to 10 feet for those which supply filled, finished packages.

Machine change-over time from one carton size to another takes approximately 30 minutes and is simply accomplished by the operator without need for a mechanic. Standard commercial coding or product identification devices can be attached to all models.

All models of the King-Tuk machine are available through Continental Can Co. Continental is the sole distributor of the models which include filling stations and deliver filled, finished packages ready for case loading.

It will install and service this line of equipment and full details can be obtained from all Boxboard and Folding Carton Division offices or the division headquarters at 530 Fifth Ave., New York 36, N. Y.

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(Continue on page 54)

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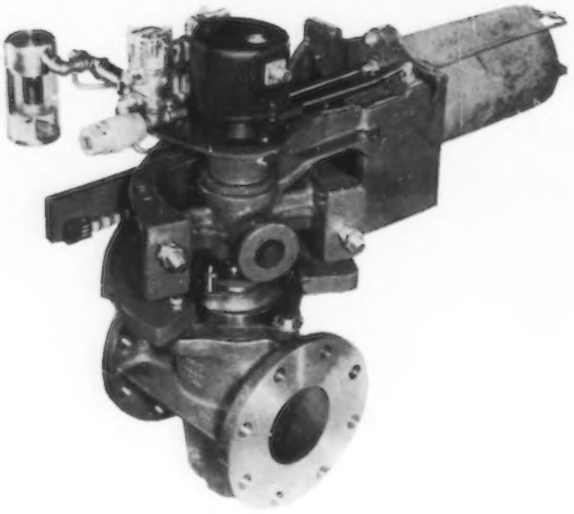

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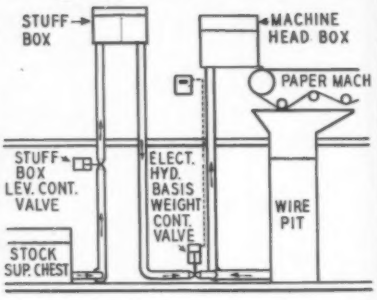

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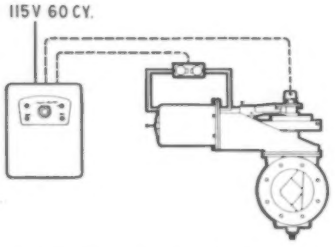
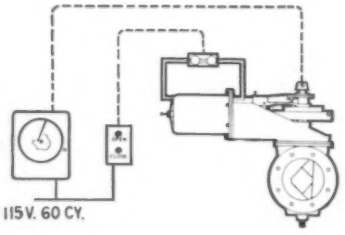
The diamond-shaped orifice of the DeZurik Vee Port Valve guarantees constant flow without plugging.



A manual control station can be furnished which will provide accurate control of the valve.

With this station the valve can be set in 2000 repeatable positions.



A push button station can also be used in conjunction with an electronic recording instrument. Because valve position is a function of basis weight, changes in basis weight are recorded on the chart.

PLANT SITES FOR PULP AND PAPER

There are many fine sites remaining for pulp and paper mills in the Seaboard Southeast where the industry has made spectacular growth in recent years.

Furthermore, the timber resources of the region assure adequate supplies of wood for the prospective increased demands of the future.

FREE SITE INFORMATION

We are prepared to furnish details on excellent sites where timber and water are in abundant supply and where other factors are favorable for pulp and paper operations.

When you are in the market for a pulp and paper location, converter plant or distribution facility, why not take advantage of the free services of an organization which has specialized successfully in pulp and paper locations for more than thirty years?

Address: Warren T. White
Assistant Vice President
Seaboard Air Line Railroad Company
3600 W. Broad Street
Richmond, Virginia

GROW with the GROWING SOUTHEAST!

Walt Parker, who can duplicate and study virtually every pulping problem in a specially equipped laboratory, says you'll like doing business with Columbia-Southern

In the Pulp Laboratory at Columbia-Southern's Barberton, Ohio, Research Center, Walt Parker and his colleagues set up the full range of chemical situations encountered in commercial pulp mills. Thus they can study at first hand any particular questions important to mills using Columbia-Southern chemicals. Evaluation of customer formulations and methods have led to major savings and boosts in efficiency for a large number of pulp and paper producers.

When analyzing customer problems, the Pulp Laboratory engineers work closely with customer technical personnel, carefully checking every step along the way. This relationship insures *practical* results when the findings of the laboratory are put into operation in the customer's mill.

Concern that customers are getting the most efficient use of Columbia-Southern products is a principle followed throughout all departments. It is very evident in the regular activity of the Technical Service Engineers, for example, who provide consultation on unloading, storing, and handling potentially dangerous chemicals such as chlorine and caustic —to mention just one area of Technical Service responsibility.

Customer-oriented concern all along the line explains why so many leading organizations, representing all manufacturing industries, rely on Columbia-Southern for their basic chemical needs.

Anhydrous Ammonia, Barium Chemicals, Benzene Hexachloride, Calcium Chloride, Calcium Hypochlorite (Pittchlor®, Pittabs®), Carbon Tetrachloride, Caustic Potash, Caustic Soda, Chlorine, Chlorinated Benzenes, Chloro IPC, Chrome Chemicals, Hydrogen Peroxide, Muriatic Acid, Pacific Crystals, Perchlorethylene, Rubber Pigments (Calcene®, Hi-Sil®, Silene®), Soda Ash, Sodium Bicarbonate, Sodium Sulfate, Titanium Tetrachloride, Trichlorethylene

columbia | southern chemicals

COLUMBIA-SOUTHERN CHEMICAL CORPORATION • A Subsidiary of Pittsburgh Plate Glass Company • One Gateway Center, Pittsburgh 22, Pa.
In Canada: Standard Chemical Limited

ADVERTISE UNTO OTHERS . . .

Open letter to suppliers who serve the paper and pulp industry

The Golden Rule applies to advertising as much as it does to other human relationships. It's just plain good business to "advertise unto others as you would have them advertise unto you."

You know what you want in an ad when you are considering a purchase:

- Quick identification of the product.
- An indication of what the product can do for you.
- Pictures, if they help you understand the product or how it works.
- Description—size, capacity, range, or other data to let you know whether or not the product meets your need.
- Evidence that the product does a good job for others, to assure you of its reliability and acceptance.
- Name and address of the company or its nearest dealer or representative, to enable you to get more information without delay.

These elements are what most of us would like to see in ads. Are these same elements being provided in the advertisements run by your company? If so, you can be sure your ads will be read carefully at the time your prospects need a product like yours. (Some of the mill men looking over this very issue need your kind of product right now.)

George E. Lockwood PUBLISHER

PAPER TRADE JOURNAL

PORTRAITS FOR PERFORMANCE

MEMBERS OF THE MOUNT VERNON FAMILY

Of Dryer Felts

One great source of supply gives you the answer to virtually every dryer felt requirement. There's an individual felt for practically every paper machine position and every paper-making need in the Mount Vernon family of dryer felts.

WOODBERRY 403—Synthetically reinforced, full-faced asbestos dryer felt. Designed to yield long life and maximum drying efficiency in the hottest positions.

RICHLAND 343—Synthetic reinforced cotton dryer felt. Engineered to endure longer runs where real wear-resistance is needed.

WOODBERRY 887—Medium weight cotton dryer felt with asbestos yarns in the face. Recommended for a wide variety of drying applications.

SIAMESE 135—All-cotton duplex dryer felt with exceptionally smooth face. An old reliable for positions where maximum porosity and efficient drying are needed.

WOODBERRY 203—Heavy-weight, full-faced asbestos dryer felt. Provides extra strength where heat-resistant clothing is required.

WOODBERRY SUPER 887—Effective combination of asbestos and synthetic fibers gives this dryer felt potential for running in many positions where similar, but more expensive, combinations are currently being used.

This is the Mount Vernon family of dryer felts. Whatever your need, whatever your problem, Mount Vernon engineers will be glad to discuss requirements, and recommend the dryer felt in the Mount Vernon family that is best suited to do the job at hand.

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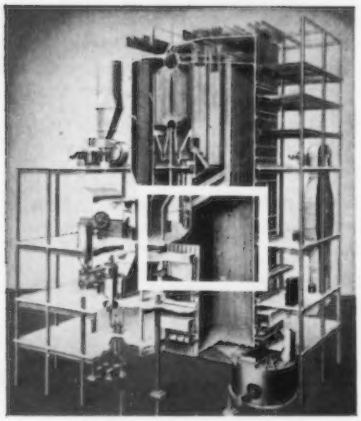
How Tangential Air Improves Furnace Performance

In the C-E Recovery Unit, secondary air is introduced tangentially above the liquor sprays by an exclusive C-E method that intimately mixes high velocity air with unburned gases. Combustion is rapid and complete. Since the tangent jets of air give the gas mixture a turbulent, spiralling motion, longer travel within the furnace results. This eliminates stratification and reduces the amount of unburned char entering the screen and superheater zones. Temperature of exit furnace gases is generally lower and more uniform, too – minimizing slag deposits.

C-E will be glad to discuss with you these and other advantages of *tangential* secondary air – which add up to greatly improved furnace performance.



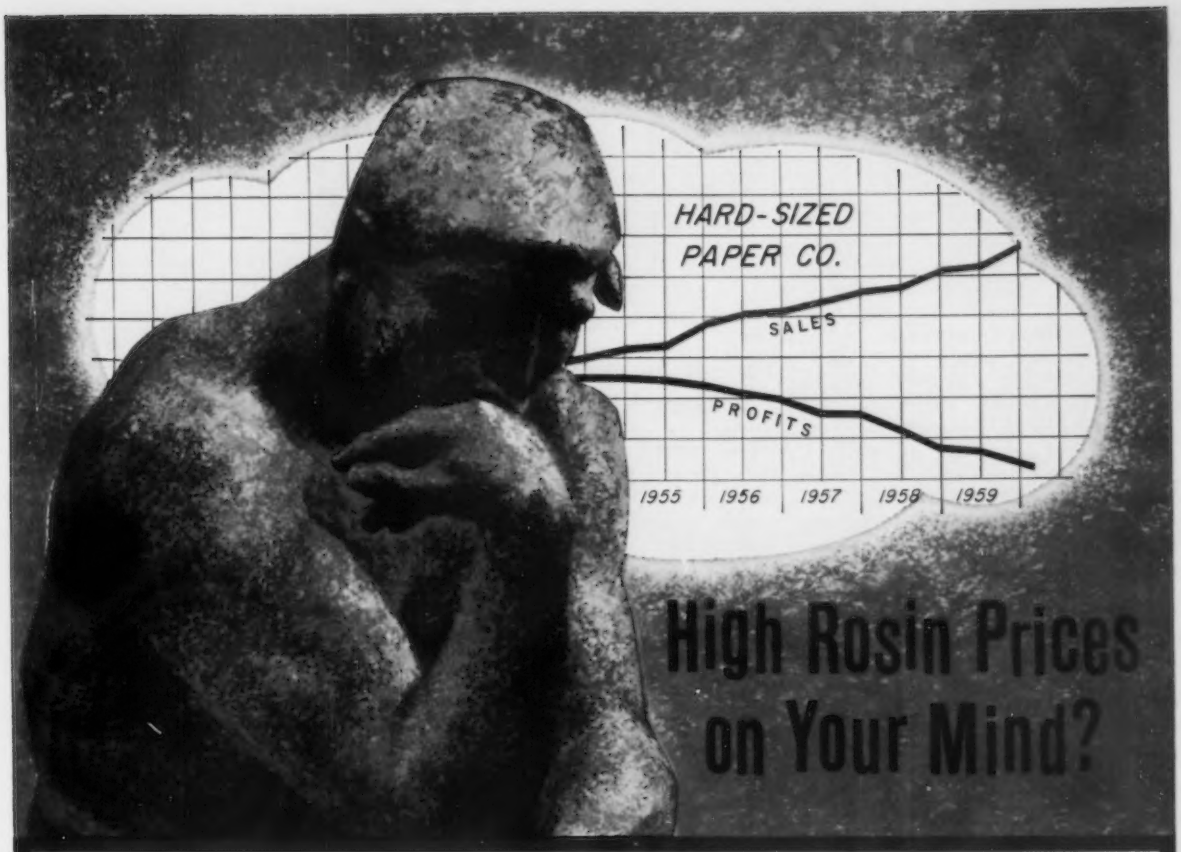
The C-E Recovery Unit. Section of illustration has been enlarged to show the upward-spiralling gas path produced by C-E's exclusive *tangential* introduction of secondary air. Inset (above, left): diagram of tangent principle.

COMBUSTION ENGINEERING

General Offices: Windsor, Conn.;
New York Offices: 200 Madison Avenue, New York 16, N. Y.
Canada: Combustion Engineering-Superheater Ltd.

C-258

ALL TYPES OF STEAM GENERATING, FUEL BURNING AND RELATED EQUIPMENT; NUCLEAR REACTORS; PAPER MILL EQUIPMENT; PULVERIZERS; FLASH DRYING SYSTEMS; PRESSURE VESSELS; SOIL PIPE



RCI WETstrez P-685 Cuts Rosin Size Requirements!

Now, more than ever, this modified acid-curing urea-formaldehyde resin affords money-saving advantages. *WETstrez P-685 has the unique ability to reduce by ⅓ to ½ the amount of rosin needed in hard-sized paper.*

Yet paper quality is maintained, or even upgraded!

When added to starch at the size press, WETstrez P-685 improves the dimensional stability and increases the wax pick of the sheet. Higher Mullen and tensile strengths are obtained.

This improved technique allows the papermaker to decrease the amount of fortified or rosin size in the beater. This frees the stock, and faster drainage on the wire occurs. A better formed sheet at higher machine speeds is obtained. *And with no unusual broke recovery problem.*

For complete technical data and information on the general technique for incorporating WETstrez P-685 into your paper manufacturing, write Reichhold for *Technical Bulletin P-12.*

Creative Chemistry...
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Synthetic Resins • Chemical Colors • Industrial Adhesives • Phenol
Hydrochloric Acid • Formaldehyde • Phthalic Anhydride
Maleic Anhydride • Ortho-Phenylphenol • Sodium Sulfite
Pentaerythritol • Pentachlorophenol • Sodium Pentachlorophenate
Sulfuric Acid • Methanol

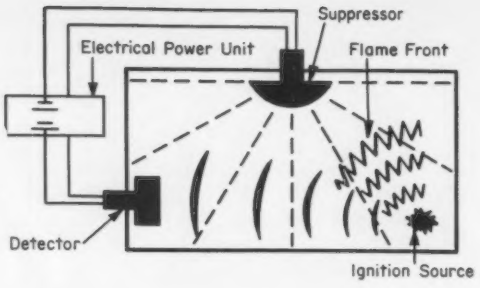
REICHHOLD CHEMICALS, INC.,
RCI BUILDING, WHITE PLAINS, N.Y.

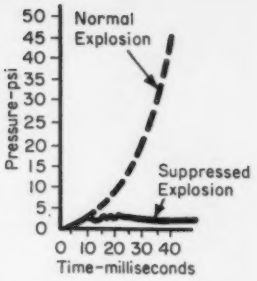
NEW EQUIPMENT

(Continued from page 50)

the process fluid to avoid corrosion problems. Available in a wide choice of materials which include: Type 316 Stainless Steel, Bronze and Hastelloy "C" for valve body; Neoprene, Molded Kel-F or Stainless Steel for Diaphragm and Disc. Sizes include ½, ¾, 1, 1¼, 1½, and 2 inches. Cap construction includes plain, packed and open lever types. Connections are screwed or flanged. It may be mounted in horizontal or vertical position.

The Farris 1000 Series Valve is designed for chemicals, slurries as well as other liquids and gases. This valve is especially suited for nitrogen and other light gas service where an absolutely tight relief valve is required. In the water treatment field, where acids and alkalies in concentrated form cause damage to other types of relief valves, the Farris 1000 Series has proved immune from corrosive action, say company spokesmen. For complete information, write to Farris Engineering Corp., 524 Commercial Ave., Palisades Park, N. J.

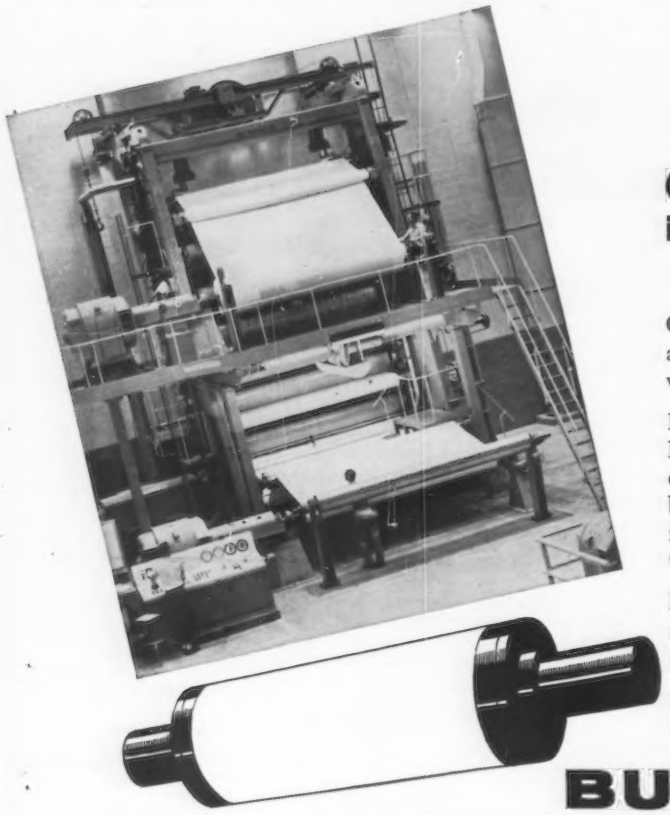




System Suppresses Incipient Explosions

The Fenwal Explosion Protection System is a patented automatic system said to offer active, rather than passive, protection against accidental explosions. It detects an explosion at the instant of its inception, and acts within a few thousandths of a second to literally snuff out the blast before it can become destructive. The system is said to be capable of dealing effectively with a vast majority of the ordinary explosion hazards known to exist throughout industry, including those of ClO_2 and H_2O_2 bleaching operation, in wood flour milling in boilers, and in many other instances.

System operation is based upon the fact that, although a blast appears instantaneous to the naked eye, there is a finite lapse in time between its ignition and the build-up of destructive pressures. The protection system acts within this peroid, which is measured in thousandths of a second. (The human eye cannot react to periods shorter than 0.1 second.) In a few milliseconds the system detects the very beginning of the explosion, either by sensing the initial pressure build-up or the first tiny flash of flame, and automatically reacts to snuff it out. The blast is made harmless by



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Oxford Paper Company's new Supercalender at Rumford, Maine, is equipped with Butterworth Calender Rolls.

Butterworth Rolls, used by the leaders in the Paper Industry, are made to specification and checked for hardness, smoothness, and density before delivery. You can see the difference in finer finishes, extra hours of service without turning down or refilling.

Furnished new or refilled for every calendering need. And you get Butterworth Rolls at competitive prices. Quotations on request.

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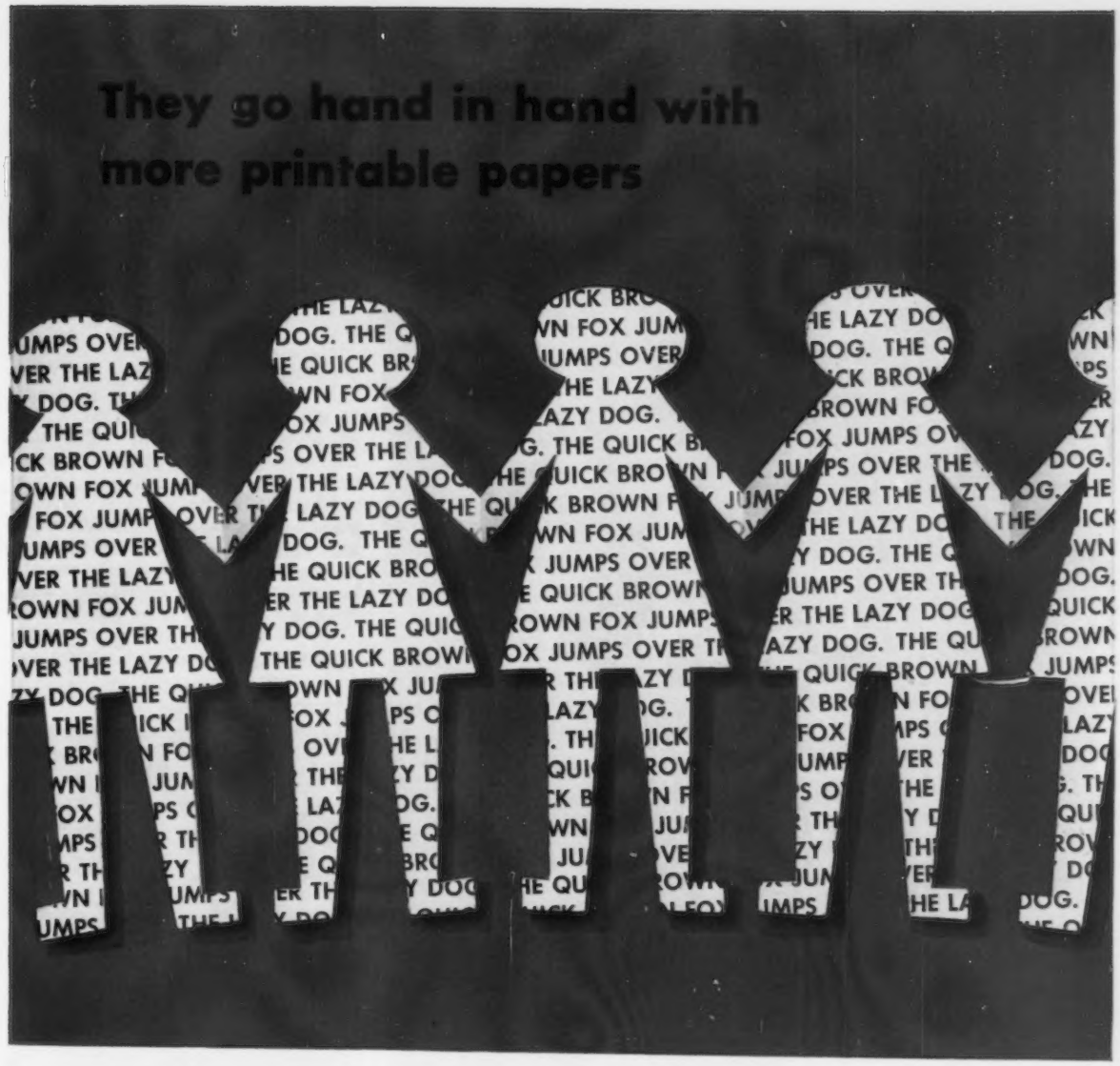


GELVA® C-3 and C-5 polyvinyl acetate resins

GELVA C-3 and C-5 Copolymer Resins applied from ammonia solutions provide improved wet strength, surface erasability, ink receptivity, surface gloss and grease and abrasion resistance. Add to these . . . increased Mullen, wax pick, tensile and fold strength, plus easy broke recovery, and you have the reason for the rapidly increasing use of these products by the paper industry.

Coast-to-coast warehousing, Shawinigan's large staff of research chemists who are ready to help you with your particular problems, and highly trained field representatives add up to an organization that can help you improve your products and your profits. Write to Shawinigan Resins Corporation, Dept. 7R, Springfield 1, Massachusetts.

SALES OFFICES: ATLANTA CHICAGO LOS ANGELES NEW YORK CLEVELAND SAN FRANCISCO GREENSBORO ST. LOUIS

GELVA® *polyvinyl acetate resins by* **SHAWINIGAN RESINS**®

a combination of actions, which may include any of the following: 1. Suppression—envelopment of the explosion with a suppressant; 2. Venting—opening a path to the atmosphere for controlled relief of pressure; 3. Advance inerting—introducing a suppressant into areas remote from the source of the explosion to prevent secondary explosions or fires; 4. Isolation—blocking the explosion from other areas; and 5. Automatic equipment shutdowns.

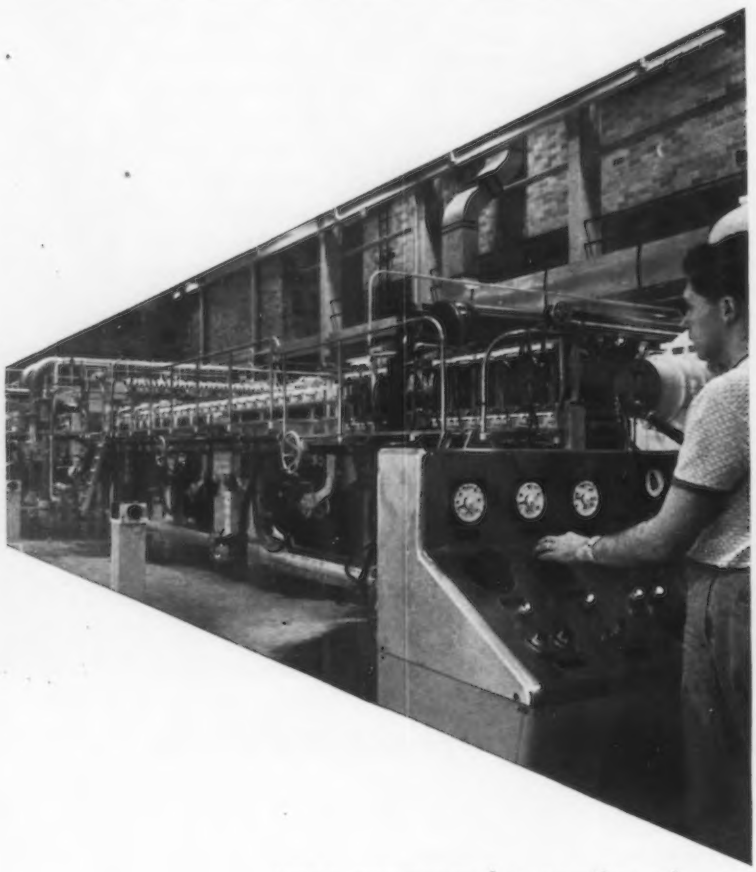
Each explosion protection installation is tailored to meet the specific needs of the protected process or equipment. Heart of the system is the explosion detector. Either a pressure or radiation device, the detector senses the incipent explosion and, in conjunction with a power unit, generates an electrical signal. Pressure detectors are sensitive to either the rate-of-pressure-rise or to a specific static pressure, or to both. Radiation detectors are designed to selectively sense certain wave lengths of the spectrum which exist in an explosive flame but to reject others present in natural or artificial light, thus eliminating potential false alarms.

Upon receipt of a signal from a detector, the power unit, which is equipped with stand[illegible] batteries, delivers electrical energy to operate the one or more explosion protection devices which may consist of suppressors, isolation valves or vents. All are operated by explosive detonators. Vents are not merely rupture discs blown out by the explosion itself but are opened before destructive explosion pressures occur.

Suppressors may be easily ruptured hemispherical containers or high-rate discharge bottles. Both contain liquid suppressants. When activated, they dispense the liquid in fine particles moving at speeds up to 600 ft per second. The most common suppressants used are water and bromochloromethane.

Essentially the vents are special glass windows which are fractured by an explosive detonator mounted against their outer face. Fragments, however, will fly outwards, away from the protected space and process.

There are two types of swiftly acting isolation valves, butterfly and



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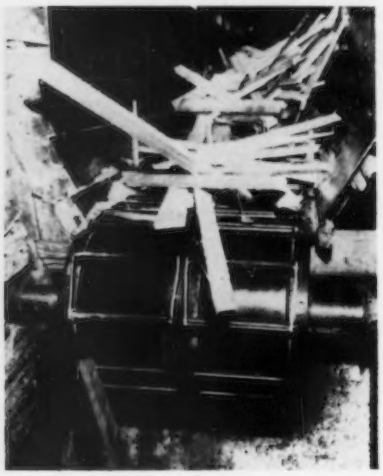


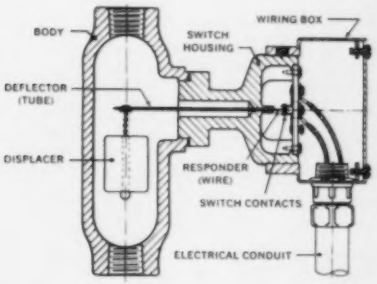
WELDED STEEL DRAG CHAIN, operates on the same sprockets as H malleable iron and H combination drag chains. They are available in four sizes, 6 to 8 in. pitch, in widths from about 7 in. to about 16 in. Chain links are designed with identical sliding area top and bottom which permits turning over of the chain. Features include medium high carbon steel sidebars, sturdy pins, and new barrel design. Chains can be easily reworked in the field if distorted or damaged in operation. Special attachments can be welded to the steel links, even added after the chain is installed. Link-Belt Co., Dept. PR, Prudential Plaza, Chicago 1, Ill.

flap. They are held open, against heavy spring pressure, by a hollow metal link. Operation of an explosive detonator within the link breaks it, allowing the spring to slam the valve closed and hold it there.

Bringing the English-developed system to this country, Fenwal has obtained exclusive U. S. and Canadian manufacturing and sales rights for the system, established continuing technical collaboration with the British manufacturing company and independently designed and modified equipment to meet specific U. S. requirements. For further information, contact Fenwal Inc., Ashland, Mass.

Leakproof Device Detects And Controls Process Variables

Yarnall-Waring Co., Philadelphia, Pa., is offering a sensing device for detection and control of process



variables. It employs the patented W-I-T (Wire in Tube) element for transmitting motion through a pressure-tight wall without bellows, seals, or stuffing boxes.

The W-I-T element consists of a flexible, curved tube containing a spring wire. Deflection of the end of the tube by a change in level, flow, or other variable causes rotation of the wire, which in turn may indicate the change or operate a switch.

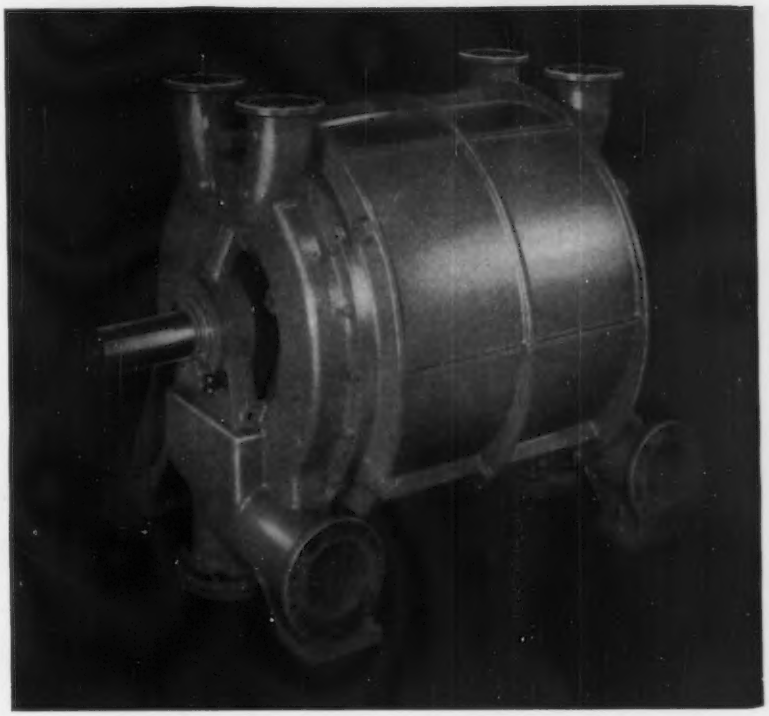
Typical applications for the compact W-I-T element would be the indication or control of level, flow, density or temperature in process tanks, piping and reactors. Contact Yarnall-Waring Co., 102 E. Mermaid Lane, Philadelphia 18, Pa., for further information.

Corrugating Adhesive Starch Has Several Practical Benefits

A starch, especially developed for corrugating adhesives, has been announced by Industrial Division, Corn Products Sales Co., 10 East 56th Street, New York 22, N. Y.

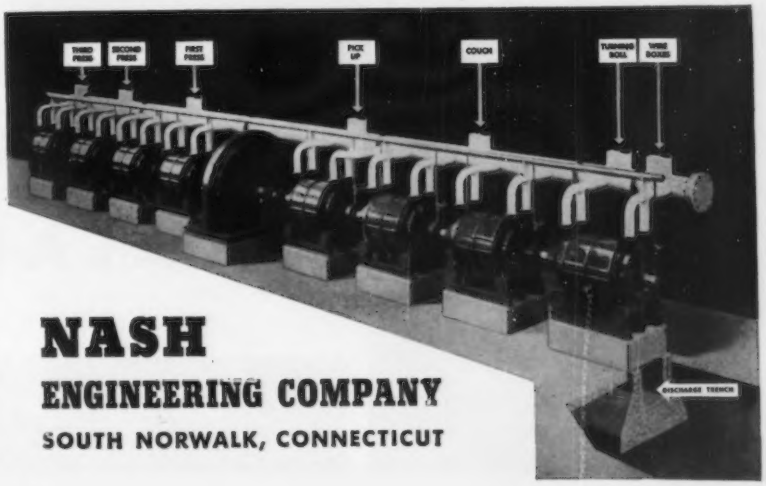
Designated Coragum FD, the cor-

This New Nash Vacuum Pump Offers Four Separate Suctions and Vacuums Simultaneously



The Nash 5308-A has four separate suction inlets, each of which functions independently of the others. This offers the machine operator great flexibility, since these may be used in any desired combination to produce a variety of capacities and vacuums.

Picture below shows simple drive possible and flexibility of piping permitting capacities to exactly fit requirements of different sections of the paper machine.

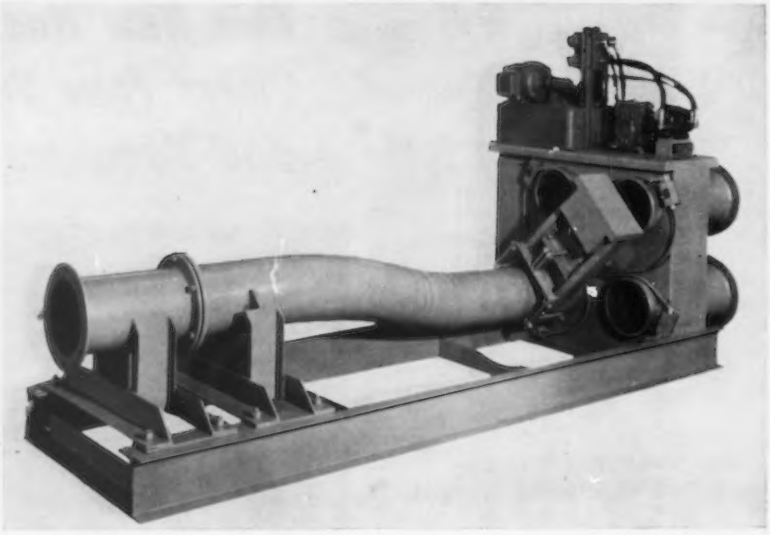


NASH
ENGINEERING COMPANY
SOUTH NORWALK, CONNECTICUT

rugating starch is produced by flash drying. This process, the company states, produces starch that is more uniform in particle size, composition and moisture content. The method of drying, in a stream of heated air, is reported to eliminate completely any chance of the particles becoming overdried or case hardened due to partial gelatinization.

Practical benefits to the corrugator, according to the announcement, are: (1) faster dispersion; (2) a more uniform adhesive paste, because the starch particles are more uniform; (3) easier housekeeping, because this starch produces little dust; (4) a heavier bodied adhesive in standard corrugating formulas since viscosity adjustment can be made by increasing the amount of water in the formula; (5) more uniform board because complete dispersion eliminates lumps and grit that can cause accumulation on corrugator fingers; glue lines are better, and scrap losses are reduced.

Coragum FD is available in bags or in hopper cars or special bulk trucks for large or small bulk handling systems. Three types of starch can be furnished, with different viscosities.



Valve for Pneumatic Chip Lines Switches Automatically

An automatic valve for directing the flow of chips into 2 to 8 different pneumatic lines has been developed by Rader Pneumatics, Inc., 1739 N.E 42nd Ave., Portland 13, Ore. The valve brings automation to a similar device, previously marketed by Rader, which required hand switching of the offset pipe section of the valve.

The valve consists of a series of ports which are actually the termini of pneumatic lines which lead to bins, digesters, open storage, or other

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Tile Tank Hi-Lo Pulper at Byron Weston Company

SOLVES LOW HEADROOM PROBLEM

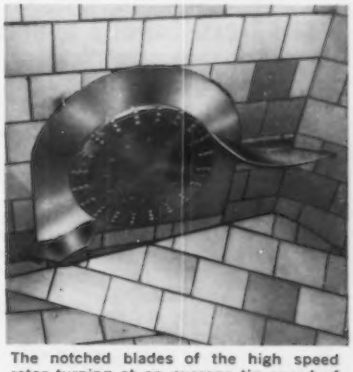
Hi-Lo Pulper tile tank installation at Byron Weston Company, Dalton, Massachusetts.

The low speed rotor, with large curved blades, provides quick breaking and maximum circulation, forcing stock across the tank to the high speed rotor for defibering.

In January of 1960 Byron Weston came to Jones with a special pulping problem. To produce their high grade cotton fibre papers Byron Weston uses a wide variety of hard-to-defibre furnish. They needed a pulper that could handle this furnish efficiently, but . . . here was the problem . . . they also needed a pulper which could be installed in 10′ headroom and still handle 35 tons per days.

Jones engineers solved both problems effectively with a specially designed tile tank Hi-Lo Pulper. It meets the limited headroom requirements without sacrificing the proven efficiency of the standard height stainless steel tank Hi-Lo.

Designed for batch or continuous pulping with low power consumption, the Jones Hi-Lo Pulper can be installed in areas where the headroom is as low as 6½′.



The notched blades of the high speed rotor, turning at an average tip speed of 7600′ per minute, project only ¼″ and use power most efficiently for defibering. The blades, held securely by duroid wedges, can be easily replaced.

E. D. JONES CORP. member BELOIT group PITTSFIELD, MASS.

Jones

PULP MILL EQUIPMENT AND STOCK PREPARATION MACHINERY

Canadian Associates:
The Alexander Fleck Ltd.
75 Spencer Street, Ottawa

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A simple, painless examination, the "Pap smear", helps physicians detect cancers of the uterus *in time*. When discovered early and properly treated, this second most common cancer in women is nearly 100% curable.

Our film, "Time and Two Women" will show you how to guard yourself against uterine cancer. It has already saved many lives. To see it, call the office of the American Cancer Society nearest you, or write to "Cancer", c/o your local post office.

AMERICAN CANCER SOCIETY

destinations for the flow of chips. The offset pipe section connects the desired port to the incoming feed line.

When the chip flow is to be switched from one line to another, the actuating switch causes the chip feeder to stop while the original line is cleaned with air. A sleeve then retracts, disconnecting the offset pipe from the first port. The offset pipe rotates to the new port, where it strikes a limit switch, causing the sleeve to close and the feeder to start again.

The whole assembly can be set up to function automatically, if desired, as when it is required to keep several bins filled from a common source. Or it can be set up to operate by remote control, as when it is desired to switch the flow of chips from the digesters to open storage, or back again.

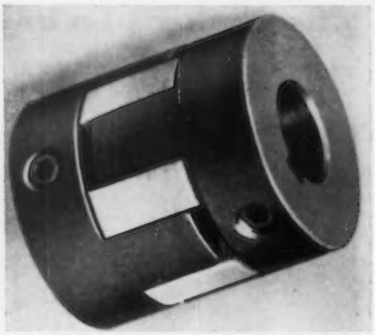
The basic model is hydraulically operated, but air-operated models are also available. Valves can be obtained with 2 to 8 ports, in both hydraulic and air-operated types.

Flexible Couplings are Corrosion-Resistant

316 Stainless Steel and glass-filled du Pont Teflon have been combined to provide a chemical-resistant flexible coupling for pumps handling corrosive media, where leakage along shaft or chemical atmospheres would cause rapid deterioration of ordinary coupling materials.

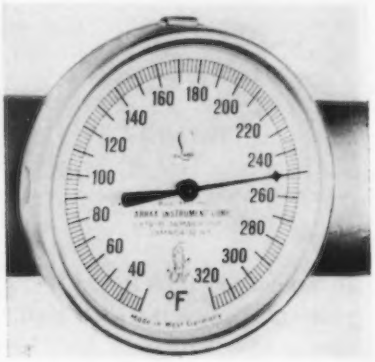
Serrated coupling halves are precision stainless steel castings. Shock-cushioning, self-lubricating spider is precision-molded from glass-filled Teflon, which obviates need for external lubrication and also acts as an electronic barrier, preventing the passage of stray currents between driver and pump.

Self-aligning, these couplings compensate for mismatch, misalignment and end movement of the shaft within reasonable limits. Couplings may be removed from the shaft for servicing pump gland without dismantling drive. They are available in bore sizes from 5/16 in. to ¾ in. from stock and weight (approx. 10 oz.) Details are available from Eco Engineering Co., 12 New York Ave., Newark 1, N. J.



Thermometer Gives Reading Of Pipe Surface Temperatures

The Abrax Instrument Corp., 179-15 Jamaica Ave., Jamaica 32, N. Y., has announced a pipe thermometer that simply clips to steam, water, gas and other pipes by means of twin spiral springs supplied with each instrument. The instruments can be attached or removed from the pipes in seconds and eliminates any need for branching or drilling. The thermometers are precalibrated to counteract the possibility of error through heat losses.



They can be used for all pipes up to 3½ inches in diameter. The dials are 2½ inches in diameter, silvered, with black figures and polished chrome casings. The thermometers are graduated in 2° divisions.

The thermometers come in two temperature ranges. Model No. APFT 460 for the range from plus 32° to 320° F. and Model No. APFT 461 for the colder ranges of minus 14° to plus 134° F.

Alvin H. Johnson & Co.

INCORPORATED

Consulting and Designing Paper Mill Engineers

415 LEXINGTON AVENUE NEW YORK 17, N. Y.

PAPER MILL DESIGN PROCESS ENGINEERING POWER PLANTS

STRUCTURAL AND ARCHITECTURAL DESIGN

REPORTS APPRAISALS ESTIMATES AND SURVEYS

PJT NEWS OF SUPPLIERS

THIS GROOVED CUTTER ROLL, for the world's largest Duplex Cutter, was covered by Massachusetts Division of Stowe-Woodward, Inc. It measures 16 feet in diameter with a 233½-inch face length. The Clark-Aiken Co. is the manufacturer of the Duplex Cutter, for the new Continental Can plant in Augusta, Ga.

Darling & Co. announces the appointment of R. E. Kimball as eastern sales representative for the Glue Division. Mr. Kimball succeeds R. R. Jones who has transferred to Darling's Fertilizer Division at the company's headquarters in Chicago.

Hercules Powder Co.'s Paper Makers Chemical Department has named John M. Eagan assistant director of operations.

Three other executive changes announced at the same time by Hercules are:

Wilbur E. Becker, to become plant manager at Savannah, Ga., succeeding Mr. Eagan.

John J. Flaherty, Jr., to become manager at Franklin, Va., succeeding Mr. Becker.

Thomas E. Powers, to be assistant plant manager at Savannah, succeeding Mr. Flaherty.

D. J. Murray Manufacturing Co., Wausau, Wis., announces that the company has been granted sole sales and manufacturing rights by Combustion Engineering, Inc., of Windsor, Conn., for the newly developed Schnyder Tunnel Barker. Combustion Engineering, Inc., holds the patent rights for the new barker which was developed by A. T. Schnyder, consulting engineer for Lummus Co., a subsidiary of Combustion Engineering, Inc. The Schnyder Tunnel Barker represents an entirely new concept in bark removal, utilizing the working parts of the conventional type trunnion barking drum, except the revolving drum is replaced with an "open" scroll sweeping the circular tunnel that supports the logs. Barking action is principally by friction and impact against the concrete tunnel wall . . . Designed for barking commercial size pulpwood ranging from 4 to 10 feet in length and 4 to 24 inches in diameter, the Schnyder Tunnel Barker is 12 feet in diameter by 48 feet or 72 feet in length, depending upon the number of scroll sections, the latter being 24 feet in length. (see PAPER TRADE JOURNAL, June 20, 1960.)

Stowe-Woodward, Inc., Wisconsin Division, has been enlarged with the opening of a new manufacturing plant. Located at Neenah, Wis., it will be the third Stowe-Woodward plant to offer suction press roll covering service to its customers. The firm also maintains divisions and manufacturing plants in Newton Upper Falls., Mass., and Griffin, Ga.

The new plant, which marks the third major expansion by the rubber firm, incorporates the latest techniques and design for the processing of rubber covered rolls. The installation of the world's largest two wheel grinder, capable of handling rolls 63 inches in diameter and 380 inches in face length will provide the flexibility necessary to handle the present as well as the future needs of its customers efficiently.

Although the plant is in full operation now, the official dedication is not scheduled until spring of 1961. It will coincide with the 75th Anniversary year of the firm.

S. J. Budowle is the plant manager. E. R. Schabloski is sales office manager. Sales engineers of the Wisconsin Division are: J. J. Dickson, C. K. Pfrangle and C. J. Ferrara.

General Aniline & Film Corp., New York, N. Y., through C. C. Schulze, recently appointed general manager, Antara Chemicals Division, announces the following executive changes.

Francis Charles has been named director of manufacturing and will be responsible for the manufacture

1. High Tearing Resistance

Celgar Kraft will contain long, strong fibres such as these from Interior-grown western hemlock. They will give the final paper product the high tearing resistance which is the outstanding characteristic of Western Canadian kraft pulps.

Celgar Kraft will contain long, thick-walled fibres

Celgar Kraft

of chemicals within the division. Until his new assignment, Mr. Charles was the plant manager of the company's Linden, N. J., plant. He will temporarily maintain his headquarters at Linden.

James M. Cloney has been appointed director of marketing and will be responsible for all sales activities of the division. Mr. Cloney was formerly sales manager—Antara Chemicals. His headquarters will be at 435 Hudson Street, New York, N. Y.

Frederick J. Gajewski has been named technical director, charged with responsibility for the Technical Research and Technical Engineering departments. Until now, Dr. Gajewski held the position of manager—process, research and development, in Linden, where he will temporarily continue to maintain his headquarters.

Wallace G. Clarke, formerly area supervisor, has been appointed special assistant to the general manager, Dr. Schulze, and will maintain his headquarters at Hudson Street.

W. F. Clarke

G. W. Legg

A. C. Waldron

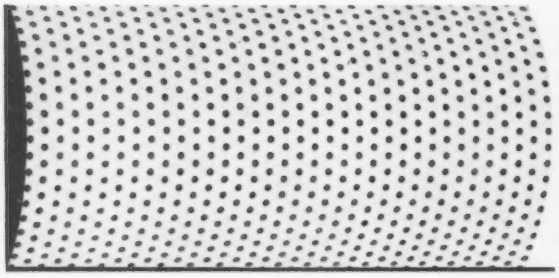
J. E. Hargreaves

Millspaugh Wimpey, Ltd., announces the appointment of W. F. Clarke, general manager, to the board of directors. Mr. Clarke has been with the company since its inception some three years ago and has been associated with several projects overseas of the parent company of George Wimpey, Ltd., for a number of years.

Millspaugh Wimpey also announces the appointment of G. W. Legg as technical manager. Mr. Legg joins Millspaugh Wimpey from Canada where he was formerly manager of the pulp and paper service department of Standard Chemical, Ltd. (Pittsburgh Plate Glass), specializing in the development and servicing of processes for the production and use of chlorine dioxide for the pulp and paper industry. Previously, he was a chemical engineer with the Pulp and Paper Research Institute of Canada and apart from giving a number of technical papers at international meetings was principally engaged upon development engineering in Canada and Europe. Prior to going to Canada he worked with Cellulose Development Corp., engineering consultant to the pulp and paper industry.

Virginia Smelting Co., West Norfolk, Va., has appointed Arthur C. Waldron New England District sales representative.

Scott Testers (Southern), Inc., has appointed John E. Hargreaves president with offices in Spartanburg, S. C. Mr. Hargreaves succeeds James M. Scott, who died unexpectedly June



Perforated Screen Plates

to fit all types of centrifugal and pressure screens SHARTLE TRIMBEY COWAN APMEW IMPCO and others all types of metal

Fitchburg Screen Plate Co., Inc.

301 SOUTH STREET FITCHBURG, MASSACHUSETTS

Made at National Perforating Corp. — a subsidiary

Concrete Gravity Air-Water-Wash type water Filtration Plant producing, at low cost, water with turbidity 0, color under 5 and iron 0.05 p.p.m. Fe.

OTHER PRODUCTS

Demineralizing Plants
Water Softening Plants
Pressure Filter Plants

and

All other types of water treating systems, including strainer valves, air wash systems, filter sand and anthracite beds and all filter repair and replacement parts. Over 50 years experience building new and modernizing old water treatment plants.

Write for FREE Bulletins

HUNGERFORD & TERRY, INC.

CLAYTON 4, NEW JERSEY

A. B. Anderson

W. C. Fife

19, 1960. Prior to his appointment, Mr. Hargreaves was manager for Scott Testers (Southern).

Mr. Hargreaves joined Scott Testers, Inc., In 1952, after having served as laboratory technician for J. & P. Coats, Pawtucket, R. I., and Jones, Gardner & Beal, Inc., Providence, R. I. He moved to Spartanburg in 1953, first to take charge of service and repair operations, and in 1958 assuming responsibility for sales as well.

Stanley Steel Strapping, division of The Stanley Works, New Britain, Conn., has transferred Albert B. Anderson, sales representative, to southern Ohio and north central Kentucky, working out of the division's Cincinnati office.

He has served industry in eastern Ohio and other parts of the state for nearly six years.

Fife Manufacturing Co., Inc., Oklahoma City, Okla., manufacturer of a complete line of automatic web guiding and edge alignment equipment, has announced the relocation of its West Coast office to Downey, Calif.

William C. Fife will represent the company in the new sales location. He has been a representative of Fife Manufacturing in the West Coast area, and was previously located in Hayward, Calif.

PJT NEW LITERATURE

Bronze
Ball Valve

Details the operation of the valve, shows cutaway views, ratings, describes specific design features and dimensions, reports on applications and advantages. 2pp Circular 611. Lunkenheimer Co., Cincinnati 14, Ohio.

Catalog on Strapping
Tools and Supplies

Describes equipment needed to apply flat, oval and round steel strapping as well as rayon strap and pressure sensitive tape. Contains strapping recommendations for light, medium and heavy weight packages, cartons, bundles, boxes and crates. 60 pp. Catalog. A. J. Gerrard & Co., 400 East Touhy Ave., Des Plaines. Ill.

Circo
Hydraulic Oils

Recommends oils for hydraulic and circulating systems operating below 120 F., replacement because of leakage, or where Fuller's earth filters are used to remove contamination and recondition the oils for extended use. Specific applications listed. 2pp Bulletin Sun Oil Co., Industrial Products Dept., 1608 Walnut St., Philadelphia 3, Pa.

Current Trends in
Continuous Causticizing

Reprint of a technical paper describing current trends in continuous causticizing practice. Includes practice in green liquor clarification, dregs washing, slaking and causticizing, white liquor clarification, white liquor polishing, lime mud washing, lime mud dewatering, lime calcination, and pumping. Photographs and diagrams of modern causticizing equipment are included, as well as a typical modern flowsheet. Technical Reprint No. 3321, Dorr-Oliver, Inc. Stamford, Conn.

Digital Speed
Measurement Systems

Illustrates instrumentation designed to provide an accurate and trouble-free method for measuring, indicating or recording most rotative motion, to meet the needs of today for precise measurement and monitoring of speed. Contains detailed specification table. 6 pp. Bulletin No. 2000. Meriam Instrument Co., 10920 Madison Ave., Cleveland 2, Ohio.

Cast-Tooth
Sprockets

Describes cast-tooth sprocket teeth ground to fit the chain. There are 132 different chain numbers listed and cross referenced to 48 sprocket lists. The complete range of types and sizes, considering all the many permutations, permits selection from over 30,000 sprockets in stock. Basic types of sprockets are illustrated, available in fine materials, extending to a depth of ¼ inch to ½ inch forming an abrasion resistant and wear resistant surface. 12 pp. Handbook No. 2867. Link-Belt Co., Dept PR, Prudential Plaza, Chicago 1, Ill.

Continuous Double
Agitator Mixers

Describes design details and gives specifications on 11 different sizes of

2. High Bursting Resistance

Celgar Kraft also will contain thinner-walled fibres from such species as spruce, balsam and cedar. These impart to the final paper product the high bursting resistance which is the outstanding characteristic of Eastern Canadian and Scandinavian bleached kraft softwood pulps.

Celgar Kraft also will contain thinner-walled fibres

Celgar Kraft

Sprout Waldron continuous doubles agitator mixers. 4 pp. Bulletin 131-B. Sprout-Waldron & Co., Inc., 130 Logan St., Muncy, Pa.

How to Use the Coatings Consultant

Tells how the independent consultant assists both manufacturers and users of coatings with their research and development problems in the face of the chronic shortage of technically trained personnel in this field, emphasizing the consultant's role, formulation, testing, and other coatings research. Booklet. Client Relations Department, Foster D. Snell, Inc., 29 West 15th Street, New York 11, N. Y.

Screw Conveyors

Illustrates standard, and industrial gas-tight screw conveyors, including specification charts, and other pertinent information. 8 pp Bulletin 83-A. Sprout, Waldron & Co., Inc., 130 Logan St., Muncy, Pa.

Stainless Steel Floor Plates

Illustrates the safety and economy features of Stainless Steel Floor Plate. Includes types available, and specification tables. 8 pp Bulletin 152. Eastern Stainless Steel Corp., Public Relations Department, Baltimore 3, Md.

Surface Active Agents

Describes a broad spectrum of cationic and non-ionic surface active agents, ranging from fatty nitrogen derivatives to polyether alcohols. Other chemicals discussed are fatty imidazoline diamines, fatty amidomonoamines, fatty amidodiamines, quaternary ammonium chlorides, oxyalkylation products, and colloidal silicas. Physical characteristics of the chemicals and some of their uses are included. 4 pp Bulletin K6. Nalco Chemical Co., 6216 West 66th Pl., Chicago 38, Ill.

Processing Equipment

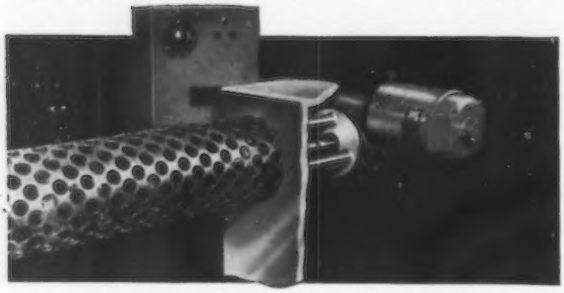
Contains information on dryers, kilns, coaters, flash drying equipment, combustion equipment, air handling systems, air pollution control systems, cookers, digesters, and other specialized machinery. Included are more than 75 photographs as well as numerous drawings and diagrams. Bulletin G560. Edw. Renneburg & Sons Co., 2639 Boston St., Baltimore 24, Md.

Moisture Control System For Paper Drying

Describes a new moisture control system for paper dryers guaranteed to maintain the exact moisture content within ½ of 1 per cent. System is said to be most simple, trouble-free, operating without electronic parts or components. According to Stickle, it costs less to buy, install, operate and maintain than any other system. 6pp. Bulletin 460-C. Stickle Steam Specialties Co. 2215 Valley Ave., Indianapolis 18, Ind.

SANDY HILL

Distributor Roll



A standardized package unit, designed for installation in new or existing head-boxes and cylinder mould vats. Produces excellent dispersion of fibres in the whole slurry.

- Direct connected motor
- Roll quickly removable
- Bearings and packing-rings water-lubricated

Write for additional information

THE **SANDY HILL**
IRON AND BRASS WORKS
HUDSON FALLS, N. Y.

RONNINGEN

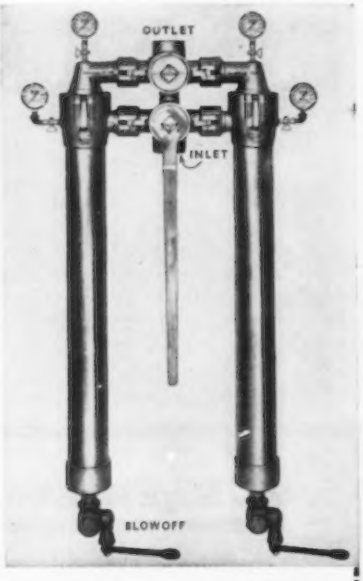
DUO

Double Duty Fluid

FILTER

always on the job

1 can be removed and the other continues operating



No other unit lets you couple or uncouple so fast and without tools. No other gives you Non-Short Circuiting—sealed at each end to eliminate trespassing. Pressures to 200 psi, temperatures to 400° F., 20 to 700 mesh, 10 to 1600 GPM. In bronze, steel, 316 stainless steel, or aluminum. Write for full data on our complete line of fluid filters.

RONNINGEN-PETTER CO.

"Particles large or small, we filter them all"

Dept. PT Vicksburg, Michigan Midway 9-5911

Synthetic Rubber and Plastics Guide

Includes data on the major synthetic rubbers and plastics, GR-S, Neoprene, Nitriles, Thiokol, Silicones, Polyvinyl Chloride, Polyesters, Polyethylene, Phenolics, Teflon and Kel-F, with charts indicating maximum concentrations, highest temperatures and the chemical resistance. 12 pp Bulletin. Product Service Department, Stowe-Woodward, Inc., Newton, Mass.

Welded Steel Drag Chains

Tells how chains consist of tough, all-steel, welded, offset links connected by large diameter steel pins, designed to withstand the demanding requirements of drag conveyors in saw mills, paper mills and similar applications. Provide exceptional resistance in impact loading and wear. Available in four sizes. Link-Belt Co., Dept PR, Prudential Plaza, Chicago 1, Ill.

Wemco Torque Flow Pump

Covers the varied industrial applications of WEMCO's non-clog Torque-Flow Pump.

Uses applications in the coal, pulp and paper, and chemical industries to illustrate how the radical new design principle incorporated in this pump makes it completely non-clog, highly abrasion resistant, yet gentle enough to handle delicate materials without damage. 4pp. Bulletin P10-B44. WEMCO, a division of Western Machinery Co.'s Sales Promotion Department, 650 Fifth Street, San Francisco 7, Calif.

Figures of the Week

PAPER PRODUCTION RATIO REPORT—American Paper & Pulp Assn. Figures

(Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

	Oct. 8	Oct. 15	Oct. 22	Oct. 29	Nov. 5
1960	93.6	95.2r	94.3	95.3r	88.4
	Oct. 10	Oct. 17	Oct. 24	Oct. 31	Nov. 7
1959	98.4	97.1	96.3	97.8	94.6

r Revised.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1960	96.5	97.7	98.1	96.9	97.6	96.1	81.2	91.7	89.1‡	94.6‡	—	—	—
1959	87.8	90.5	93.2	94.4	95.5	95.6	84.5	96.0	92.4	97.4	96.2	86.6	92.2

‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1953	1954	1955	1956	1957	1958	1959	1960
Year to Date	94.2	91.9	96.2	98.6	91.2	87.1	92.6	93.9
Year Average	92.3	91.6	96.2	97.9	90.4	87.0	92.2	—

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available.

PAPERBOARD OPERATING RATIOS†—National Paperboard Assn. Figures

COMPARATIVE WEEKLY SUMMARIES

	Oct. 8	Oct. 15	Oct. 22	Oct. 29	Nov. 5
1960	92	94	93	91	88
	Oct. 10	Oct. 17	Oct. 24	Oct. 31	Nov. 7
1959	98	98	94	96	94

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1960	92	95	94	92	94	92	78	93	87	93	—	—	—
1959	89	94	95	94	96	96	83	97	92	96	94	80	92

—

‡Preliminary.

† *Per cents of operation based on "inch-hours" reported on a 6-day basis to the National Paperboard Association.*

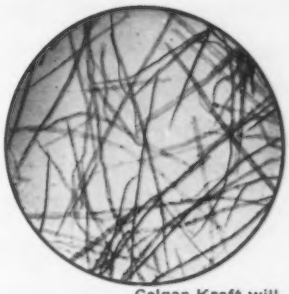
SUMMARY OF PAPERBOARD STATISTICS—National Paperboard Assn. Figures

ITEM	THIS WEEK ENDING Nov. 5, 1960	LAST WEEK ENDING Oct. 29, 1960	CUMULATIVE TO DATE Jan. 1, 1960 to Nov. 5, 1960
% Activity	88%	91%	91%
Total	308,733	318,032	13,624,130
Containerboard—Domestic Use.	160,172	163,577	7,042,562
Liner	107,502	110,344	4,723,558
Corrugating Material	48,098	49,399	2,096,270
Chip & Filler Board	4,572	3,834	222,734
Boxboard—Domestic Use	94,543	98,529	4,188,755
Folding	57,200	59,945	2,510,704
Set-Up	10,388	10,746	478,748
Special Food Board	26,955	27,838	1,199,303
Other Paperboard	54,018	55,926	2,392,813
Containerboard Type	26,654	26,106	1,143,565
Boxboard Type	27,364	29,820	1,249,248
Total Orders			
Received	355,583	299,841	
Unfilled End of Week	469,198	418,183	

3. Balanced Properties

Through its mixture of long, strong, thick-walled fibres and its thinner-walled fibres, and due to the climatic conditions influencing tree growth, Celgar Kraft will achieve naturally a balance of strength properties which can normally only be duplicated by blending several grades of pulp.

Celgar Kraft



Celgar Kraft will have balanced properties

PAPER TRADE JOURNAL CLEARING HOUSE

Help Wanted

PAPER MEN

$5,000 to $50,000

SALES • PRODUCTION • TECHNICAL

Finding and landing THE ONE BEST JOB requires sound analysis, careful planning, proper contacts and skillful negotiation.

Paper men ourselves, and the only recognized professional specialists in the world in our particular field, we assist responsible paper men to accelerate their careers by uncovering and developing THE SPECIFIC SITUATION that most exactly fits the needs of each individual we serve.

If you seek to better yourself, and your performance to date entitles you to our endorsement, we can and will help you. Contact us in absolute confidence for information regarding procedure.

GEO. M. SUNDAY & ASSO.

PERSONNEL CONSULTANTS TO THE PULP, PAPER & ALLIED INDUSTRIES

6 East Monroe, Chicago ANdover 3-1970

TF

Help Wanted

WANTED

Mechanical Engineer with at least two years' experience for position in Engineering Department of Tennessee pulp and specialty paper mill. All phases of general engineering, one plant location, on TVA lakes, two life insurance policies, excellent surgical and hospitalization policy and liberal pension plan—all at no cost to employee. Reply with picture, complete educational and occupational backgrounds to Box 60-230 care Paper Trade Journal.

D-5

BETTER POSITIONS

$6000 to $35,000. Want a substantial salary increase, more opportunity or different location? This national 49 year old service connects you with best openings. You pay us only nominal fee for negotiations; This we refund when employer pays placement fee. Present position protected. In complete confidence, write for particulars. R. W. Bixby, Inc., 563 Brisbane Bldg., Buffalo 3, N. Y. N-21

DEVELOPMENT ENGINEER

We are looking for a chemical or mechanical engineer with an extensive pulp and paper process background.

The position is basically equipment development for the pulp and paper industry, however, a strong process background is essential.

This man should be capable of handling projects with only limited guidance and should have a minimum of three years mill experience.

Necessity for industry contacts will involve some travel.

Please forward complete resume including salary requirements to:

C. R. Farrell

DORR-OLIVER INC.

Havemeyer Lane, Stamford, Conn.

N-7

Help Wanted Advertisements continued on page 68

GIBBS-BROWER CO., INC.

10 Depot Plaza, White Plains, New York

Established 1898

Telephone—Rockwell 1-1130

BRANCHES:

400 Wash. Building, Madison 3, Wisconsin

Acepsa, Albeniz #4418, Mexico 15, D.F.

5270 E. Wash. Blvd., Los Angeles 22, Calif.

PRINTING PRESSES

2—Hy-Rotos: 1-26" 3-color & 1-30" 3-color
1—41⅜" 5-color Staude Roto Gravure Press
1—51" 3-color Flexo Press
1—42" 4-color Hudson Sharp Central Impression Cylinder Flexo Press
1—42" 4-color Crawford Flexo Press
1—40" 6-color W & H Flexo Press
1—40" 4-color W & H Flexo Press
1—36" 6-color Cottrell Heinrich Flexo Press
1—33" 6-color Modern Clipper Flexo Press
1—33" 4-color Wolverine Hydro-Printer
1—32" 3 color Flexo Tail Printer
1—32" 4-color Schmutz Bag Press
1—24" 5-color Kidder Calloprinter
1—14" 4-color Waldron Gravure Press
1—3" 1-Color Rotary X Tape Printer
1—9" x 12" (3 over 1) New Era Press

POWER PAPER CUTTERS

SEYBOLDS:	56"-Dayton	44"-Dexter
	50"-Precision	44"-C&P
	50"-Mod. "CF"	44"-Oswego
84"-8Z	44"-Mod. "CF"	44"-10Z
75"-Oswego	40"-Mod. "CF"	38"-Oswego
64"-Precision	50"-C&P	32"-Oswego
57"-Oswego	50"-Dexter	32"-3Y

CAMACHINES

1—102" #18
1—87" Type 12
1—72" 10-10A
1—62" 10-11A
1—62"—28-3BT
1—52" 10-5A
1—52" & 1—42" Model 24-7
1—50" 28-3D
1—42", 50" & 62" Type 6
1—32" 26-3A

OTHER SLITTERS

2—82" Langston: 1—"BA" & 1—"B"
1—65" S & R (Similar Kidder Model C.W.)
1—60" & 1—40" Fales Model "C"
1—40" & 1—52" Fales Model "B"
1—60" Langston Type A
1—60" Inman With Reeves Drive
1—52" Moisel (Shear-Cut)
2—40" Beck Razor Blade Slitters
1—40" & 1—60" Kidder SH 40" rewind
1—40" Langston "Type A" (Shear-Cut)
1—24" 1—30", 1—36" & 1—40" Kidder S.L. & 1—36" SLN

MISCELLANEOUS MACHINES

2—New 3 Deck Hudson Sharp 10 x 10 Cocktail and Hanky Machines
1—30" Schultz Rewinder with Electronic Drive
1—Multipath Bag Machine—4 Color Holweg Printer
1—Honsel Millinery Bag Machine (Model S-50) Wide Range & 3 Color Printer
1—(Round & Square) Butter Chip Machine
1—48" Schultz Rewinder
1—66" PCM Continuous Roll Winder
1—99" 3-Bar Towel Winders
1—2-bar Towel Roll Converter
1—Lawtomatic Towel Roll Wrapper
1—Hayssen Banding Mach. Mod. 5-15
1—Std. Knapp Mod. 806H Case Packer
1—Battle Creek Poly Twin Toilet Roll Wrapper (New)
1—Facial Tissue Machine Complete
2—81" Dietz Tissue Converters
4—81" PCM Tissue—2 Towel Machines
1—Lawton Jr. Wrapper
1—Roto Model "C" Cello Bag Machine
1—Beasley French F&S Bag Machine
1—34" Waxer with 4-Ton Refrig. Unit
1—36" and 1—45" CCSH Beck Sheeter
1—94" M & W Sheeter & Layboy
Hamblet Sheeters—32", 45", 64", & 104"
1—Simplex 7-24 Pouch Machine
1—Matador Model #31 Bag Machine
2—Model 4 Potdevin Sack Machines
2—38" x 24" 4-Post Seybold Die Presses
5—Sheridans: 66" x 44", 60" x 30", 50" x 24", 44" x 22" & 36" x 18" and 1—Ford-Smith: 48" x 40"
Embossers 48", 38", 32" & 50" Heavy Duty Hudson Sharp Tinter-Embosser
1—55" Waldron Embosser
1—40½" Hudson Sharp Toilet Interfold

N-21

BARKING DRUM

1—12 ft. diameter x 45 ft. long

BEATERS

2—1500 lb. rag beaters, Valley Iron, bandless rolls, 54" x 48", cast iron tubs.

CALENDER STACKS

1—3 roll 84" face
1—4 roll 72" face. (Extra heavy duty)
1—5 roll 82" face.
1—5 roll 86" face

CHIPPERS

1—96" Murray 4 knife Chipper—anti-friction bearings.
1—84" 10 knife Carthage Chipper. Anti-friction bearings, with motor

COATER

1—42" Chapman Extrusion Type Coater

CONSISTENCY REGULATOR

1—Poirier Stainless Steel, new condition

CRUSHER & HAMMERMILL

1—Murray Chip Crusher.
1—Williams Hammermill.
1—Jeffrey Shredder.

CYLINDER MOLDS

5—36" diameter x 75" face, with couch rolls
1—36" diameter x 82" face.
4—36" diameter x 90" face, with couch rolls.
1—42" diameter x 96" face
2—42" diameter x 106" face
2—60" diameter x 170" face.

DRIVES

1—Jones 21 H.P., ratio 10 to 1 (enclosed angle drive)
1—#4 Reeves Drive.
2—Waterbury Hydraulic Variable speed line shaft drives (from 40 to 100 H.P.)
2—Falk Drives, 20 h.p. & 160 h.p.

DRYERS

1—16" diameter x 54" face (steel).
1—28" diameter x 84" face.
1—28" diameter x 48" face.
2—Calender Dryers, bronze, 30" x 128" with frames, gears & necessary rolls to make up the unit.
1—36" diameter x 44" face.
5—36" diameter x 76" face.
23—36" diameter x 84" face.
14—48" diameter x 48" face with bearings.
2—48" dia. x 52" face with frames, gears, bearings
2—48" x 60" face frames, gears & bearings
1—48" x 96" face.
6—48" diameter x 130" face.
1—60" diameter x 92" face, anti friction bearings.

EMBOSSING CALENDERS

1—43" 3-Roll Embossing Calender.
1—48" 2-roll Meadows Embossing Calender
1—51½" 3-roll Smoothing Calender.
1—57" 3-roll Embossing Calender.
1—62" 2-roll Embosser.
1—90" 2-roll Smoothing Calender.

FILTER

1—Dorr-Oliver Filter, 3 ft. dia. x 6 ft. face, stainless steel construction, with pump.

FLAT SCREENS

1—12 Plate "Packer"
4—14 Plate IMPCO, bronze vats

JORDANS

1—#1 Jones High Speed Jordan
1—Jones Standard, new spare tackle, with 75 h.p. motor.
1—Noble & Wood Monarch, Type D, anti friction bearings.
1—Noble & Wood Baby Jordan, anti friction bearings, with 20 h.p. motor.
1—#6 Miami, anti friction bearings.

LABORATORY EQUIPMENT

1—4" face x 36" diameter Saveall
1—Washer for 5 lb. Beater.
1—24" Saveall, stainless steel.
1—20" Fourdrinier Wet End & Press Section.
1—12" x 12" Valley Sheet dryer.
1—18" x 20" Williams Sheet Dryer
1—15 lb. E. D. Jones Beater.
2—Noble & Wood Cycle Beaters with motors & stands
1—1½ lb. Valley Iron Works Beater, motor and stand.
1—Greene Freeness Tester.
1—Cady Micrometer.
7—Mullen Testers, motorized.
1—2 qt. Auto Clave. Stainless Steel.
2—Elmendorf Tear Testers.
1—27" High Solid Coater.
1—Noble & Wood Baby Jordan, anti friction bearings, with 20 h.p. motor.
2—Emerson, Jr., No. 1 Jordans, anti friction bearings.

MISCELLANEOUS

1—Bird Centriffler, built 1958, new condition.
1—Shartle Hydrafuge, 1000 g.p.m. (with motor)
3—Bird Centrifflers, stainless steel.

MOTORS

4—25 h.p. Westinghouse, totally enclosed, ball bearing. 705 r.p.m.

PRESSAFINER

1—7" Bauer Pressafiner, stainless steel construction, with new spare motor.

PRESS ROLLS

2—Chilled iron, chrome plated 9" x 72".
1—Chilled iron, chrome plated 10" x 74".

PULPERS

1—#1 Jones Pulp Master.

PUMPS

1—Economy Fan Pump 6000 g.p.m., 20' head, 50 h.p. motor.

REELS

1—72" Downingtown Reel, 2 bowl.
1—84" 3 bowl revolving reel.
1—86" 2 bowl reel.
1—100" Rice Barton 2 bowl Reel, heavy duty.
1—116" Downingtown, 2 bowl, anti friction bearings.
1—123"—3 bowl Revolving Reel.
1—134" 2 drum.

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1—12" Wiener Refiner, with 200 h.p. motor.
2—36" Bauer double disc #185E Refiners, each with two 100 h.p. motors.

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2—APMEW Rotary Pulp Screens.

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1—42" Cameron Type 40-2.
1—50" Cameron Type 6.
3—52" Cameron Type 9
1—62" Cameron Type 6
1—72" Cameron Type 28-3-D
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1—13 roll 53" Norwood, anti friction bearings.

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2—L-4 Nash.
3—L-5 Nash.
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American S. F. Products ..... —
American Steel & Wire Co. ..... —
American Viscose Corp. ..... —
Ames Company Inc. ..... —
Amtorg Trading Corp. ..... —
Anglo American Clays Corp. .. 58
Anglo Paper Products Ltd. .. —
Annin Company ..... —
Antara Chemicals, Sales Div. Gen. Aniline & Film Corp. .. —
Apmew, Inc. ..... —
Appleton Machine Co. ..... —
Appleton Wire Works ..... —
Armco Drainage & Metal Prod. Co. ..... —
Armco Steel Corp. ..... —
Armstrong Machine Works .. —
Asten-Hill Mfg. Co. 2
Ateliers de Constructions Allimond ..... —
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Babcock & Wilcox Co. ..... —
Bahr Brothers Mfg. Co. ..... —
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Barco Manufacturing Co. ..... —
Bauer Bros. Co. ..... —
Becco Chem. Div. Food Machy. Corp. ..... —
Beloit-Eastern Corp. ..... —
Beloit Iron Works Co. ..... —
Binet, Louis et Cie ..... —
Bird Machine Co. 29
Bixby, R. W. Inc. 66
Black-Clawson Co. ..... —
Bolton & Sons 23
Brandon Sales, Inc. ..... —
Broughton, A. E. & Co. ..... —
Brown Company ..... —
Bruderhaus (Maschinenfabrik Zum) ..... —
Buckeye Cellulose Corp. ..... —
Buffalo Forge Co. ..... —
Buffalo Pumps 15
Butterworth, H. W. & Sons Co. 54
Cady, E. J. & Co. ..... —
Cadillac Associates Inc. 68
Cameron Machine Co. ..... —
Carthage Machine Co. ..... —
Celgar Ltd. 61, 63, 65
Cellulose Development Corp. ... —
Central Soya Co. ..... —
Cesalpina S.P.A. ..... —
Chromium Corp. of America .. —
Ciba Company ..... —
Cincinnati Rubber Mfg. Co. .. —
Clark-Aiken Company ..... —
Clarkson Company ..... —
Classified Advertising 66
Clearing House 66
Cleveland Crane & Engrg. ..... —
Columbia-Geneva Steel Div., U. S. Steel Corp. ....50D & 50E
Columbia-Southern Chem. Corp. Sub. of Pittsburgh Plate Glass Co. ..... —
Combustion Engrg. Co. 52
Corn Products Sales Co. ..... —
Crane Company ..... —
Curtiss-Wright Corp. ..... —
Darling & Company ..... —
Davis, Frank H., Co. Inc. ..... —
DeBergue Machine Tools, Ltd... —
DeZurik Corporation 50B
Diamond Alkali Co. ..... —
Dobeckmum Company ..... —
Dodge Mfg. Co. ..... —
Dorr-Oliver ..... —
Dow Chemical Co. ..... —
Dow Industrial Service Div. Dow Chemical Co. ..... —
Doyle, J. E., Co. ..... —
Draper Bros. Co. ..... —
Dryden Paper Co., Ltd. ..... —
du Pont, E. I. de Nemours & Co., Dyes & Chem. Dept. .. —
Electrochemical Dept. ..... —
Industrial & Biochem. Dept. —
Pigments Dept. ..... —
Duverre Inc. ..... —
Eaton Manufacturing Co. ..... —
Ebasco Services, Inc. ..... —
Economy Equipment Co. ..... —
Egan, Frank W., & Co. ..... —
Electric Mchy. Mfg. Co. ..... —
Egger, Emile & Co. ..... —
Elixman Paper Core Co. ..... —
Evans, W. P. & Son, Ltd. ...18B
Export Supplement Oct. ..... —
Falk Corporation ..... —
Farrel-Birmingham Co. ..... —
Finckh, Herman ..... —
Fitchburg Screen Plate Co. .. 62
Food Mchy. & Chem. Sales Dept., Chemicals & Plastics Div. ..... —
Food Mchy. & Chem. Corp. Chlor-Alkali Div. ..... —
Foxboro Co. ..... —
Garlock Inc. ..... —
Gaspesia Sulphite Co. Ltd. .... —
Gates Rubber Co. ..... —
Geigy Chemicals Corp., Geigy Dyestuffs Co. ..... —
General Dyestuffs Co. ..18C & 18D
General Mills, Inc. ..... —
General Tire & Rubber Co. ..... —
Gibbs-Brower Co. 66
Gilbert & Nash Co. ..... —
Glidden Company ..... —
Goodyear International Corp. ... —
Goodyear Tire and Rubber Co. .....Back Cover
Gottesman-Central National Org. ..... —
Gould's Pumps ..... —
Great Eastern Packing & Paper Stock Corp. ..... —
Green, Inc., Frank B. ..... —
Greening & Sons, Ltd. ..... —
Grinnell Co., The ..... —
Gurley, W. & L. E. ..... —
Hamblet Machine Co. ..... —
Harbison Walker Refractories .. —
Hardinge Company, Inc. ..... —
Harris-Seybold ..... —
Harshaw Chemical Co. ..... —
Hayssen Mfg. Company ..... —
Heimbach, Thomas I. ..... —
Hercules Powder Co. ..... —
Hooker Chemical Co. ..... —
Houghton & Company ....48 & 49
Huber, J. M. Corp. ..... —
Hudson Sharp Machine Co. .. —
Hungerford & Terry, Inc. ... 62
Hunt, Rodney 50
Hunt & Moscrop ..... —
Huyck Felt Company ..... —
Hyster Company ..... —
Improved Machinery, Inc. 16
Ingersoll-Rand Co. ..... —
Inglis, John, Co. ..... —
Industriplanering ..... —
Jagenberg, Werke ..... —
Jamesbury Corp. ..... —
Jenkins Brothers 13
Johns-Manville Corp. 10
Johnson, Alvin H., Co. 60
Johnson Corp., The ..... —
Jola, G.m.b.H. ..... —
Jones, E. D., Corp. 59
Kalamazoo Tank & Silo Co. .. —
Kamyr, Inc. ..... —
Karlstads Mekaniska Werkstad —
Kellogg, M. W. Company .... —
Kenyon, James & Son ..... —
Kidder Press Co. ..... —
Knox Woolen Co. ..... —
Koppers Co., Inc. ..... —
Lamb-Grays Harbor Co. ..... —
Lamont Fils ..... —
Langston, Samuel Co. 18
La Papeterie ..... —
Laporte Titanium Ltd. ..... —
Lawson Company ..... —
Layton-Greenfield Inc. ..... —
Lestoil, Inc. ..... —
Link-Belt Co. ..... —
Lob, Albert Maschinen und Apparatebau ..... —
Lockport Felt Co. ..... —
Lockwood Greene Engineers .. —
Lodding Engineering Co. .... —
L'Homargy ..... —
Lukon, Inc. ..... —
Lunkenheimer Co. ..... —
Lyddon & Co. ..... —
Main, Charles T., Inc. 60
Manchester Machine Co. ..... —
Marathon—A Division of American Can 21
Mead Pulp Sales, Inc. ..... —
Merck, E., & Co. ..... —
Miehle-Goss-Dexter ..... —
Miller Corp., Harry ..... —
Millspaugh, Ltd. ..... —
Minerals & Chem. Philipp Corp. 17
Minneapolis-Honeywell .....6 & 7
Mixing Equipment Co. ..... —
Monsanto Chemical Co. ..... —
Montague Mch. Co. ..... —
Moore & White Co. ..... —
Morden Machines Co. ..... —
Mt. Vernon Mills, Inc. 51
Murray, D. J., Mfg. Co. 19
Nalco Chemical Co. 4
Nash Engineering Co. 57
Nashua Industrial Machines .. —
National Gypsum Co. ..... —
National Perforating Co. ..... —
National Starch & Chemical Corp. 22
National Tube Div., U. S. Steel Inc. ..... —
Newport News Shipbldg. & Dry Dock Co. ..... —
New Jersey Zinc Co. 9
Nichols Eng. & Research Corp. ..... —
Nopco Chemical Co. ..... —
Norfolk & Western Ry. ..... —
Northeastern Paper Sales .... —
Norton Co. ..... —
Oakite Products Inc. ..... —
Olin Mathieson ..... —
Osborne Paper Mill Equipt. Co. —
Overly's Inc. ..... —
Paper Conv. Mch. Co. 14
Parsons & Whittemore ..... —
Patton Mfg. Co. .....Front Cover
Penick & Ford ..... —
Penn. Ind. Chem. Corp. 18A
Penobscot Chemical Fibre Co. .. —
Pennsalt Chem. Corp. ..... —
Perkins, B. F. & Sons Inc. ..... —
Perkins Goodwin Co. ..... —
Permutit Co., Div. of Pfaudler Permutit Inc. ..... —
Pfaudler Permutit Inc., Permutit Div. ..... —
Pioneer Paper Stock Co. ..... —
Potdevin Machine Co. ..... —
Powell Valves 11
Price & Pierce, Ltd. ..... —
Provident Life & Acc. Insurance ..... —
Puget Sound Pulp & Timber .. —
Raymond, Charles P., Service Inc. ..... —
Record Fdy. & Mch. Co. ..... —
Red Rav Mfg. Co. ..... —
Reichhold Chemicals 53
Rhoads, J. E., & Sons ..... —
Rice Barton Corp. 24
Riedel, Gus & Son ..... —
Riegel Paper Corp. ..... —
Rockwood Sprinkler Co. ..... —
Rohm & Haas Co. ..... —
Ronningen-Petter Co. 64
Roosevelt Paper Co. ..... —
Rosenblad Corp. ..... —
Ross, J. J., Co. 67
Ross, J. O., Engrg. Co. ..... —
Ross Midwest Fulton Corp. ... —
Ross Paper Machinery Co. .. 69
Ruderman Machinery Exchange —
Rust Engineering Co. ..... —
Ryerson, Jos. T., & Son ..... —
Sandoz Chem. Wks. ..... —
Sandy Hill Iron & Brass Wks 64
Scapa Dryers Inc. .....Cover 3
Scott Testers ..... —
Seaboard Air Line R. R. Co. .50C
Shawinigan Resins Corp. 55
Sheffield Corp. ..... —
Shuler & Benninghofen ..... —
Signode Steel Strapping Co. .. 20
Sinclair Company ..... —
Sirrine, J. E., Co. 56
SKF Industries ..... —
Smidth, F. L., & Co. ..... —
Smith & Winchester Mfg. Co. .. —
Socony Mobil Oil Co. ..... —
Sonoco Products Co. ..... —
Southworth Machine Co. ..... —
Spraying Systems Co. ..... —
Sprout Waldron & Co. 12
Stadler Hurter & Co. ..... —
Staley Mfg. Company ..... —
Stebbins Engrg. Co. ..... —
Stein, Hall & Co. ..... —
Stephens-Adamson Mfg. Co. .. —
Stevens, Inc., Charles R. .... —
Stone & Webster Eng. Corp. .. —
Stowe-Woodward, Inc. ..... —
St. Regis Paper Co., Kraft Div. —
St. Regis Paper Co., Panelyte Div. ..... —
Sturge Ltd., John & E. ..... —
Sulzer Brothers ..... —
Sunday, George M., Assoc. .. 66
Taylor Instrument Co.'s ..... —
Taylor-Wharton Company .... —
Technical Translation Bureau .. —
Techno Corp. ..... —
Tennessee Coal & Iron Co. ... —
Tennessee Corp. ..... —
Texaco, Inc. ..... —
Texas Gulf Sulphur ..... —
Thermal Equipt. Corp. ..... —
Thiele Kaolin Co. ..... —
Thiry & Company ..... —
Thomas Paper Stock Co. 58
Titanium Pigment Corp. .... —
Torrington Company ..... —
Tyer Rubber Company ..... —
United Engrg. & Fdy. Co. .... —
Universal Metal Hose Co. .. —
U. S. Industrial Chem. Co. Div. of National Distillers & Chem. Corp. ..... —
U. S. Rubber Company ..... —
U. S. Steel Corp. ..... —
United States Steel Export .... —
United States Steel Supply Co. —
Valley Iron Works ..... —
Vanderbilt, R. T., Co. ..... —
Virginia Smelting Co. 8
Voith, J. M., G.m.b.H. ..... —
Waldron-Hartig Div., Midland Ross Corp. ..... —
Wallingford Steel Co. ..... —
Walworth Co. ..... —
Weber, H. G., Company ..... —
West End Chemical Div., Stauffer Chem. Co. ..... —
Western Pacific R. R. Co. .... —
West Virginia Pulp & Paper Co. —
Weyerhaeuser Co. ..... —
Williams-Gray Co. ..... —
Wisconsin Wire Works ..... —
Witco Chemical Co. ..... —
Woodpulp, Inc. ..... —
Wyandotte Chem. Corp. ..... —

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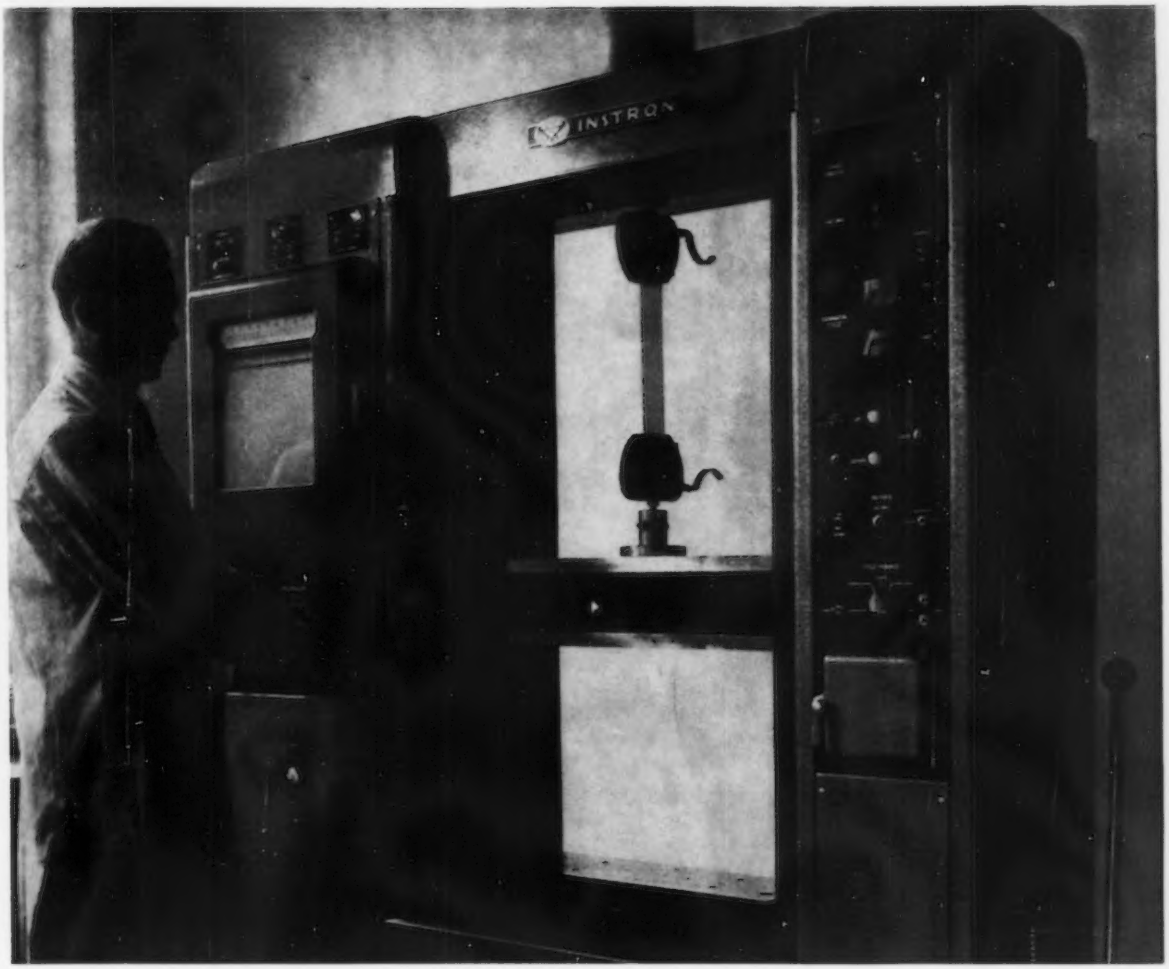

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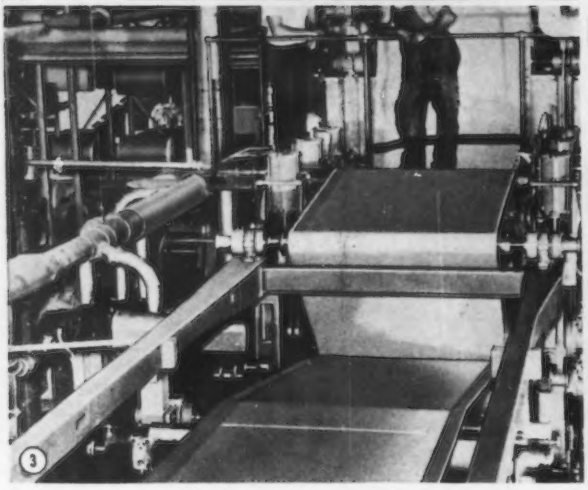

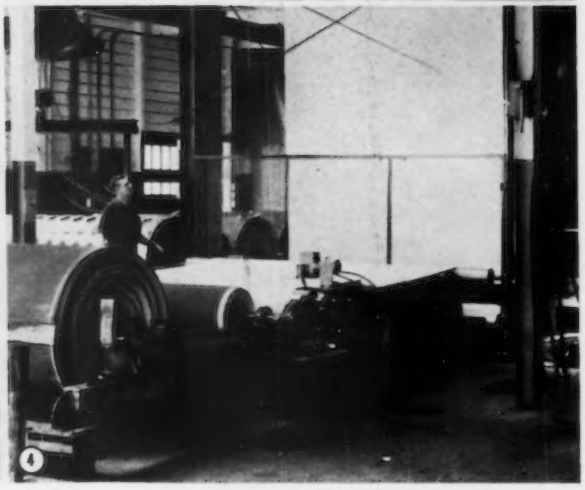

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